T-54/55

TANK CRAFT

SOVIET COLD WAR MAIN BATTLE TANK

Robert Jackson

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An Iraqi T-55 knocked out by an air attack on the Basra–Baghdad highway. (Wikimedia Commons)

TankCraft 16

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Front cover. Top: 1/35 scale Takom T-54 in Finnish service (William Stewardt). Centre left: A column of Warsaw Pact T-55s on exercise, with Mt-55A engineer supprt vehicles at the rear. Centre middle: An Iraqi Type 69 ablze on Highway 27 pictures in April 2003 during Operation Iraqi Freedom. Centre right: A North Vietnamese T-55 entering the grounds of the US embassy during the capture of Saigon. (Reuters). Profile illustration: The T-55A (Model 1961) in winter camouflage. (William Marshall, SA Colours & Markings)

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Introduction

During the Second World War, Soviet tank production had concentrated on two main categories, one heavy, the other medium. The heavy tank classification had produced the KV and IS series, while the other resulted in the excellent T-34. By mid-1944, however, it was apparent that the T-34 was reaching the end of its development life. Seeking a replacement, Soviet tank designers turned to a 1941 project called the T-34M, which was a T-34 with improved armour, a hexagonal three-man turret, torsion bar suspension, increased fuel capacity and greater ammunition storage. Five hulls were built, but the project was abandoned when Germany invaded the Soviet Union. It was resurrected in 1944 and development proceeded under the designation T-44, which had heavier armour to give better protection against large-calibre anti-tank guns. Attempts to fit the T-44 with a 122mm main gun were unsuccessful as the turret was too small to accommodate it, so the vehicle retained the 85mm gun of the T-34/85. Production of the T-44 began in August 1944 and in September the tank was issued to three Soviet Army tank brigades, which used it for training purposes before re-equipping with T-34/85s prior to the final assault on Berlin. About 150 T-44s were completed by the end of the war, but continued technical problems meant that the type did not see combat. Production ended in late 1945 after 965 examples had been produced.

It was therefore the T-34 medium tank that continued as the main equipment of the Soviet armoured divisions in the immediate post-war years, its potential opponents in the event of any confrontation with the western allies being the tanks that had spearheaded the advance through northwest Europe, the American Sherman and M46 Patton, and the British Comet and Churchill. These were capable of holding their ground against the T-34/85 during these years and indeed would have had no choice but to do so, because the next generation in the series of Patton tanks, the M47, intended

to replace both the Sherman and the M46, would not be fit for deployment until 1952. The British were better placed, because 1946 saw the first European deployment of the Centurion, the tank that would alter the balance of western armoured capability in the face of a possible threat from the east.

In the Soviet Union, work had continued on seeking a viable replacement for the T-34/85, and in February 1945 a prototype was built, based on the T-44 and designated T-54. The latter closely resembled the T-44, but the upper frontal section of the glacis was raised to 120 millimetres (4.72 in), the driver's observation slit being deleted and replaced by two MK-1K hatch periscopes, and the lower section to 90 millimetres (3.54 in). The turret rested on a new 1,800mm (5.9ft) turret ring and the vehicle was powered by a V-54 12-cylinder, 38.88-litre, water-cooled, diesel engine. Other new design features included the installation of an articulated TSH-20 optical sight for the commander and gunner, with electric traverse. A DShK 12.5mm heavy machine gun was fitted for anti-aircraft defence. The chosen main armament was a 100mm D10T gun with a rifled barrel.

A T-44 preserved as a museum piece. The vehicle was issued to

three Soviet tank brigades in late 1944 and was used for training purposes. (Wikimedia Commons)

A well-preserved T-54-1 on display at Verkhnaya Pyshma, near Yekaterinburg. (Wikimedia Commons)

Design work on the prototype of the new main battle tank, designated Ob'yekt 137, proceeded at the OKB-520 Morozov Design Bureau, which was housed in the Malyshev Plant in Kharkov, Ukraine. The first prototype underwent field trials in 1946. These revealed all manner of snags, and before series production could begin many modifications had to be made to this vehicle and successive prototypes.

Limited production was authorized in 1948 with the T-54-1. Some 1,490 units were produced, but snags were still apparent and these had to be corrected before production switched to the improved T-54-2, 423 examples of which were built by the Stalin Ural Tank Factory No. 183 and issued in 1950. These were followed by a further 800 in 1951. Following further modifications, the definitive

version, the T-54A, made its appearance in 1953. By this time, there had been changes in the T-54 design team: Morozov had departed, to be replaced by Leonid N. Kartsev in March 1953. Production started in 1954 and the tank entered service in 1955. It served as a basis for T-54AK command tank, with additional R-112 radio set (front-line tanks were equipped with R-113 radio set), TNA-2 navigational device, the AB-1-P/30 charging unit, which was produced in small numbers, and with the ammunition load for the main gun decreased by five rounds. In October 1954 a T-54A tank, designated as T-54M (Ob'yekt 139), served as a testbed for new D-54T and D-54TS 100mm smoothbore guns and Raduga and Molniya stabilization systems.

The T-54-2 incorporated many of the improvements that were found necessary in the T-54-1, but the tank still needed further refinement. (via J. R. Cavanagh)

The T-54A was the definitive production version of the T-54. It made its appearance in 1953 and entered full production two years later. (Military Images)

A new version, based on the T-54A and designated T-54B (Ob'yekt 137G2), was designed in 1955. It was fitted with a new 100mm D-10T2S tank gun with STP-2 Tsyklon 2-plane stabilizer. It entered production in 1957. During the last four months of production, the new tanks were equipped with an L-2 Luna infrared searchlight, a TPN-1-22-11 IR gunner's sight, and an OU-3 IR commander's searchlight. Modern APFSDS ammunition was developed, dramatically enhancing the penetrative performance of the gun to keep it competitive with NATO armour developments. T-54B served as the basis for T-54BK command tank, which had exactly the same additional equipment as the T-54AK command tank.

Trials with tactical nuclear weapons showed that the T-54 could survive a detonation of between two and 15 kilotons at a distance of more than 300 metres (980 ft), but as the T-54 had no nuclear, biological or chemical (NBC) protection the chances of the crew surviving at less than 700 metres (2,300 ft) were negligible. The KB-60 Design Bureau in Kharkov was therefore given the task of upgrading the T-54 to incorporate the necessary modifications,

which involved protection against nuclear blast and a filtration system against radioactive particles. Production of the upgraded vehicle was assigned to the Ural Tank Factory, where it was decided to increase the tank's battle capabilities by changing its construction and introducing new production technologies.

In 1953 a popular rebellion erupted in East Berlin. It started with a strike by construction workers on 16 June and turned into a widespread uprising against the German Democratic Republic government the next day. The new T-54 was deployed in anger for the first time, alongside the veteran T-34/85, one of which is pictured here being stoned by youths. (Life)

T-54s parading through the streets of Berlin following the abortive popular uprising in June that year. The T-54 now features a modified hemispherical turret. (Life)

A T-54 parading through the streets of Berlin.

A young enthusiast inspecting the workings of a T-54A in a Russian Museum. (Wikipedia Commons)

A T-54A in the Panzer Museum at Thon, Switzerland. (Wikipedia Commons)

T-54As of the Soviet Army pictured on an exercise in 1955. The vehicle now sports a distinctive fume extractor at the end of the gun barrel. (TASS)

The ammunition load for the main gun was increased from 34 to 45, with 18 shells stored in so-called wet containers located in the hull fuel tanks. (Wet stowage consisted of surrounding the ammunition stowage bins with a water/ gylcerine mixture held in an outer hollow casing. The idea was that the water mixture would pour out over any penetration of the bins by enemy AP shot/shell fragments, thereby preventing or at least slowing ammunition fires.)

The ammunition load included high-explosive-fragmentation and anti-tank rounds and designers also planned to introduce the BK5M HEAT rounds which could penetrate armour up to 390 millimetres (15 in) thick. The commander and gunner both received upgraded optical vision devices, and the loader's hatch-mounted 12.7mm DShK anti-aircraft heavy machine gun was deleted as it was now considered to be ineffective against high-performance ground-attack

aircraft. The tank had a thicker turret casting and the improved two-plane gun stabilization system from the T-54B, as well as night vision fighting equipment. To balance the weight of the new equipment, the armour on the back of the hull was thinned slightly.

With all these upgrades and modifications included, the tank received the designation T-55.

The T-54/55 in Detail

The Driving Compartment

The driving compartment was essentially similar to that of the T-34, with the driver seated on the left. Access to his position was via a small hatch in the hull roof, rather than the glacis plate. The controls were conventional, with left and right steering levers and foot controls. The gear-change lever was on the right. The driver had two periscopes, fitted below and forward of the hatch cover. The driver was responsible for firing the 7.62mm bow machine gun by means of a button mounted on the righthand steering lever.

The Fighting Compartment

The fighting compartment accommodated three of the tank's four-man crew in very cramped conditions, a penalty of the turret being of reduced size to achieve a smaller profile. The commander and gunner were seated to the left of the 100mm main gun, one behind the other, with the loader seated on the right opposite the co-axial machine gun.

The Engine Compartment

The 520hp V-54 12-cylinder, water-cooled, diesel engine was installed in the rear of the hull. In the T-55, this was upgraded to the new V-55 12-cylinder, 4-stroke, onechamber, 38.88-litre engine developing 581hp. Greater engine power was accomplished by increasing the pressure of the fuel delivery and charging degree. The designers introduced a heating system for the engine compartment and MC-1 diesel fuel filter. The engine could be started pneumatically with the use of an AK-150S charger and an electric starter, eliminating the need for the tank to carry a tank

filled with compressed air. To allow easier access during maintenance and repairs, it was decided to modify the access hatches over the engine compartment. To increase the operational range, 300-litre (66 imp gal/ 79 US gal) fuel tanks were added to the front of the hull, increasing the overall fuel capacity to 680 litres (150 imp gal/ 180 US gal).

The Turret

The second production T-54 (Model 1951) originally featured an oval-shaped turret with a small cutaway at the rear where it met the hull, but this was considered to be a weak spot if penetrated by enemy fire and it was deleted. The turret was made from a single casting with a roof plate welded on and fitted with two hatches; there was a prominent dome on the top right side of the turret, and the turret sides were equipped with handrails.

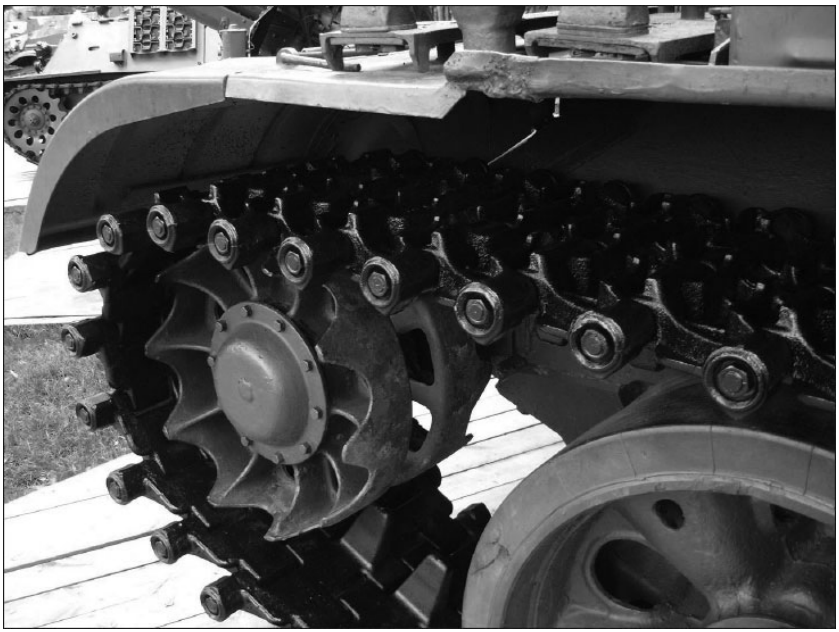
Detailed model of the T-55 turret, showing hatches and 12.5mm machine gun. (source unknown)

The Hull

The hull design gave the T-54/55a lower profile than that of the T-34, making it a less prominent target. The suspension each side featured five road wheels, idler front, drive sprocket rear, no track return rollers or skirts, the exhaust pipe on the left track guard above the fourth/fifth road wheel. Flat fuel storage tanks were installed on the right side of the hull above the track.

The T-54/55track shoes were held together with dry pins of malleable cast iron, suited to high speed and vigorous crosscountry

operation. (via J. R. Cavanagh)



T-55 rear drive sprocket. (source unknown)

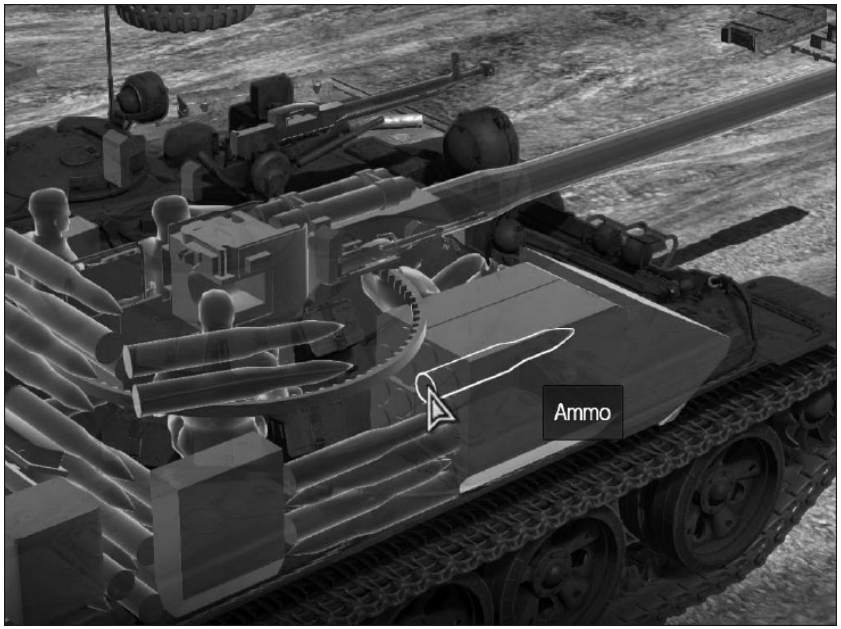


Diagram illustrating ammunition stowage in the T-55. (source unknown)

Armament

The main armament of the T-54/55was the D-10 100mm gun, originally used in the SU-100 tank destroyer. The D-10 was a high-velocity gun with a barrel length of 53.5 calibres and a muzzle velocity of 895 m/s. In its initial form it could penetrate about 16 millimetres of steel armour plate at 1,000 metres' range. In 1955 an STP-1 Gorizont stabilizer and fume extractor were added, this upgraded version being designated D-10TG. The gun could be power-elevated from –5° to +17°. In 1956, the subsequent D-10T2S version of the gun, equipped with a Tsyklon gun stabilization system, entered production for T-54B and T-55 tanks. Versions of the D-10 were installed on new tanks as late as 1979. Although the gun itself remained basically unchanged during its operational life, it used new types of ammunition as these were developed. In 1967, for example, the 3BM6 hyper-velocity armour-piercing discarding-

sabot round (HVAPDS) entered service: at a range of 2,000 metres, it could penetrate 290 millimetres of flat armour, or 145 millimetres of armour angled at 60° from the vertical. It was later replaced by the 3BM8 HVAPDS projectile, with a tungsten carbide penetrator.

Armour

As with other fighting vehicles, the degree of armour protection incorporated in the T-54/55varied throughout the tank's service, being constantly upgraded to cope with new threats.

Field trials with the original T-54-1 revealed many snags which had to be corrected before production could restart. (Wikimedia Commons)

The T-54/55 Main Battle Tank Variants

The T-54/55saw service with the armoured forces of some 50 nations during its long career, and each one added its own imprint in terms of modifications and equipment. To list each one is beyond the scope of this work, so only the principal variants used by the countries of the original Warsaw Pact are listed here.

T-54-1 (Ob'yekt 137, Model 1946)

First series production version, based on the second T-54 prototype but with thicker hull armour (80 millimetres on the sides, 30 millimetres on the roof and 20 millimetres on the underside). The tank featured a streamlined turret and wide gun mantlet, similar to that of the T-44, a new V-54 transverse engine, a 100mm unstabilized D-10T main gun, and two 7.62mm SG-43 machine guns mounted on the fenders. Trials revealed many problems and production was halted after only a few had been built.

T-54-2 (Ob'yekt 137R, Model 1949)

A much redesigned T-54-1, the T-54-2 was produced during 1949–52 and incorporated a number of improvements to the turret, as well a wider track (580 millimetres) and modernized transmission. The turret was dome-shaped with flat sides, similar to the design used in the IS-3 heavy tank, and with a distinctive overhang at the rear. The fender-mounted machine guns were replaced by a single hull-mounted 7.62mm weapon.

T-54-3 (Ob'yekt 137Sh, Model 1951)

This variant was built in the USSR from 1952 to 1954 and in Poland from 1956 to 1964. It featured a new hemispherical turret and new TSh-2-22 telescopic gunner's sight instead of the earlier TSh-20. The tank could to use its engine exhaust smoke system to create a smokescreen by injecting vaporized diesel fuel into the exhaust system, a modification that remained standard throughout the entire T-54/T-55 series.

T-54A (Ob'yekt 137G)

The definitive version of the T-54, this tank was produced in the USSR (1955– 57), Poland (1956–64), Czechoslovakia (1957–66) and China (as the Type 59). It incorporated the Gorizont vertical-plane gun stabilizer, a snorkel for wading through waterways, a TSh-2A-22 telescopic sight, a TVN-1 infrared driver's periscope and IR headlight, the new R-113 radio, a multistage engine air filter and radiator controls for improved engine performance, an electrical oil pump, bilge pump, automatic fire extinguisher and extra fuel tanks.

The T-54-2 had a new domed turret with an overhang at the rear, which was later eliminated as it was a potential shot trap. (Wikimedia Commons)

The T-54-3 introduced a new hemispherical turret with the previous overhang deleted. This one is a Polish-built example. (via J. R. Cavanagh)

A T-54A pictured at the Panzer Museum, Thun, Switzerland. (Wikimedia Commons)

The T-54B was modernized with new equipment that optimized the

tank for night fighting. (Yuri Pasholok)

The early model T-55 lacked a turret-mounted anti-aircraft machine gun, but this was restored from 1970. (Wikimedia Commons)

A T-55 wearing one of the many camouflage schemes used by the tank in Warsaw Pact service. (Wikimedia Commons)

T-54B (Ob'yekt 137G2)

An improved T-54A, this variant was produced in 1957/58 and was armed with the D-10T2S main gun with STP-2 Tsyklon two-axis stabilization. Infrared night-fighting equipment, including an L-2 Luna infrared searchlight, was added in 1959, together with a TPN-1-22-11 IR gunner's day-and-night sight and OU-3 IR commander's searchlight.

T-55 (Ob'yekt 155)

Manufactured in the USSR, Poland (1958–64) and Czechoslovakia (1958–83), the T-55 featured a new turret, nuclear blast protection and NBC system, gamma ray detector, an improved V-55 engine developing 580 horsepower with fuel injection, a power-assisted

clutch, a compressor to allow pneumatic engine starting, and new internal fuel tanks with a capacity of 300 litres situated in the front of the hull, increasing the overall capacity of the internal fuel tanks to 680 litres. The ammunition load for the main gun was increased from 34 rounds to 43. The antiaircraft machine gun was deleted and the vehicle was equipped with a snorkel, allowing it to ford waterways up to 5.5 metres deep. A further development, the T-55A, produced in the USSR and Poland, incorporated extra anti-radiation protection. The hull machine gun was deleted and the co-axial SGMT machine gun replaced with a PKT MG. From 1970, provision was made for fitting a 12.7mm heavy anti-aircraft machine gun to the turret.

The T-55, seen here on manoeuvres with the Soviet Army, was to remain the standard main battle tank with many nations for decades. (TASS)

T-55M

By the end of the 1970s it was clear that the T-55 would need to undergo a substantial upgrade to extend its useful life through the next two decades. In 1983 armour and armament were both

enhanced, the revised vehicle being designated T-55M. The additional armour included layers of armour plate fitted on either side of the turret and the glacis, the layers in the form of a sandwich with penopolyurethane foam between them, and 10mm armoured skirts of steel-reinforced rubber to add further hull protection. The armament was also upgraded in 1983, the T-55M tank upgrade programme making it possible for some tanks to fire the 9K-116-1 Bastion (NATO reporting name AT-10 Stabber), for use against enemy tanks and low-flying helicopters. The missile was handled, loaded, and fired exactly like a conventional tank gun round. One and a half seconds after firing, a laser guidance window in the tail of the round was uncovered, and its rocket engine ignited to burn for up to six seconds, with a total missile flight time of up to 41 seconds. The missile was very expensive, about half the cost of a T-55M tank, but allowed the 100mm gun to engage modern main battle tanks at a range of up to 4,000 metres.

The upgraded T-55M gave rise to several sub-variants, including the T-55M-1 with a V-46-5M engine, as used in the T-62, the T-55MV with Kontakt explosive reactive armour, and the T-55AD with the Drozd (Thrush) anti-missile system designed to counter anti-tank missiles. In the event this system was only incorporated in about 250 T-55s used by the Soviet Naval Infantry.

Major Warsaw Pact Operators

The T-54/55series tanks were produced in massive numbers. Overall, an estimated 35,000 T-54s were built in the Soviet Union between 1946 and 1958, followed by 27,500 T-55s between 1955 and 1981. In addition, 3,000 T-54s were produced under licence in Poland between 1956 and 1964, followed by 7,000 T-55s between 1963 and 1979, while Czechoslovakia produced 2,700 T-54s under licence between 1957 and 1966 and 8,300 T-55s between 1964 and 1983. The Czech-built tanks were of a much higher quality than those produced in Soviet factories, and most went for export.

A T-55AD fitted with the Drozd anti-missile system seen at the Kubinka Tank Museum. (Wikimedia Commons)

A Polish T-55M. (source unknown)

A Czech-built T-55M. (source unknown)

Albanian T-55s on manoeuvres. (Albanian State News Agency)

T-55 tanks of the Bulgarian People's Army rolling past the mausoleum of Georgi Dimitrov, the first communist leader of Bulgaria, in Sofia. (Bulgarian News Agency)

Other Warsaw Pact Operators

Albania

Albania became a Soviet-aligned country after the Second World War and originally had a single tank brigade armed with 75 T-54s. Its armoured forces were later expanded and received 300 T-55s,

together with 750 Chinese Type 59s.

Bulgaria

Bulgaria, whose armed forces were organized along Soviet lines in the late 1940s (the country having changed sides and fought alongside the Russians during the latter part of the Second World War) ordered 900 T-54 tanks from the Soviet Union in 1953, these being delivered between 1954 and 1959. A follow-on order for 900 T-55s from the Soviet Union was placed in 1961, deliveries taking place between 1962 and 1970.

German Democratic Republic (DDR)

The National People's Army of the DDR came into being in March 1956, and its creation was followed by an immediate order for 202 T-54s from the Soviet Union. These were delivered between 1956 and 1957. A further 488 T-54As and T-54AMs were ordered from Poland and delivered between 1959 and 1964. Czechoslovakia supplied 1766 T-55s and T-55As, ordered in 1964 and delivered between 1964 and 1980, while 333 T-55s and T-55A(P)s were ordered from Poland and delivered between 1965 and 1973. In addition, 362 VT-55 recovery vehicles were ordered in 1964 from Czechoslovakia and delivered between 1965 and 1969.

Hungary

The Hungarian Army was mainly armed with the T-34/85 up to the 1956 Uprising, in the wake of which the armed forces were disbanded. The armed forces were reconstituted in 1959 and, fully committed to the Warsaw Pact, received large quantities of modern military equipment, including T-54/55main battle tanks.

Romania

The Soviet occupation of Romania in the Second World War led to a complete reorganization of the Romanian land forces (Fortele Terestre Romane, FTR) under Soviet supervision. In the early 1950s the army had a single tank division armed with T-34s, rising to three armoured divisions in the early 1970s. These were equipped with 850 T-55s, ordered from the USSR in 1969 and delivered between 1970 and 1971. A number of T-54s were also acquired. In 1974 a locally produced variant of the T-55, the TR-580, came into service; this used the T55's V-55 engine and had an extended chassis. 394 T-55s and 227 TR-580s were still in service in 2017, alongside a new tank, the TR-85, introduced in 1986.

Apart from the Warsaw Pact nations, only two other European countries operated the T-54/55. One was Finland, which ordered 50 T-54s in 1960 from the Soviet Union and took delivery between 1960 and 1961, while 70 T-55s were ordered in 1965 from the Soviet Union and delivered between 1965 and 1967. An additional 10 T-55AMs were bought from Poland and converted into T-55AM-Marksman anti-aircraft vehicles; the turrets were delivered in two batches, the first ordered in 1988 and delivered between 1990 and 1991 and the second ordered in 1992 and delivered in 1993.

The other was Yugoslavia, which had some 160 T-54s and 1,600 T-55s in service in 1991, at the time of the country's breakup. The tanks were acquired by the various successor states, notably Serbia, which undertook modifications to 282 T-55s before selling them to Pakistan in 2015.

A Finnish Army T-55M. (Finnish Tank Museum, Parola)

T-55 tanks of the DDR National People's Army on parade in East Berlin. (Neues Deutschland)

Romanian soldiers and a T-55 tank pictured during the Romanian revolution in 1989. (Romanian National News Agency)

The TR-85 tank owed its origins to the T-55, but the differences are clear in this photograph. (Romanian National News Agency)

The T-55s of the Yugoslav Army, acquired by the successor states after the civil war of the 1990s. The second vehicle carries the emblem of Croatia. (Via Del Lewis)

An Afghan Army T-55 laid up for the winter. (Wikimedia Commons)

A Type 59 main battle tank of the Bangladesh Army. The vehicle has been fitted with extra reactive armour. Bangladeshi T-55/Type 59s were named Al Zarrar, which means ‘Main Striker’ in Urdu. (Bangladesh National News Agency)

A Cambodian Type 59 tank preserved as a museum piece at Siem Reap. (Wikipedia Kyle Simourd)

The Middle East and Asia

Afghanistan

In the late 1950s, the Afghan government acquired moderate quantities of Soviet tanks in a bid to modernize its armed forces. Initially, these comprised T-34 and IS-3 tanks, but in 1961 50 T-54s (former Soviet Army machines) and 50 T-55s were ordered from the Soviet Union and delivered between 1962 and 1964. A further 200 T-54s, also former Soviet Army vehicles, were ordered in 1978 from the Soviet Union and delivered between 1978 and 1979. Another 705 T-55s were ordered in 1978 from the Soviet Union and delivered between 1978 and 1991.

Bangladesh

Fifteen ex-Egyptian T-54s were ordered in 1973 from Egypt and delivered in 1975. Fifteen T-55s, also ex-Egyptian, were also ordered in 1975 and delivered in the same year. Further deliveries of T-54s, T-55s, Type 59s and Type 62s were made between 2001 and 2003, amounting to 240 vehicles of all types. Many of the T-54s and T-55s subsequently underwent modernization.

Cambodia

An original order for ten ex-Soviet Army T-54s was placed in 1983, and 100 T-55s were ordered in 1988. Fifteen T-55s were ordered in 1990 from the Soviet Union and delivered in 1990. Forty T-55AM2s were ordered in 1994 from the Czech Republic, and another 50 T-55AM2BPs were also ordered in 1994 from Poland and delivered in 1994. In 2017 the Cambodian Armoured Cavalry had 220 T-54/55s on its inventory, together with about 100 Type 59s.

Egypt

The biggest foreign customer for the Czechbuilt T-54/55was Egypt, which initially ordered 350 T-54s in 1960. Deliveries of this batch were completed in 1966. In addition, 150 T-55s were ordered in 1963, these being delivered before the outbreak of the Arab-Israeli 'Six-Day War' of June 1967. 800 more T-54s and 550 T-55s were received in the aftermath of this conflict, the last being delivered in 1967.

India

Following Independence in 1947, the Indian government adopted a policy of acquiring arms from both the Eastern Bloc and western nations, mainly Britain and France. The first order from the Soviet

Union was placed in 1964 and involved 300 T-54s, these being delivered between 1965 and 1967. Further orders were as follows: 225 T-55s ordered in 1968 from the Soviet Union and delivered between 1968 and 1971; 650 T-55s ordered in 1971 from the Soviet Union and delivered between 1971 and 1974; 274 T-54s, 44 T-55s and seven T-55AKs ordered in 1970 from Czechoslovakia and delivered between 1970 and 1971; 300 T-55s ordered in 1971 from Poland and delivered in 1971. The last of the T-55s were retired in May 2011 and placed in storage.

An Egyptian T-55 carrying out a beachlanding exercise with American forces during Operation Bright Star, initiated in 1982 as an annual US–Egyptian exercise in cooperation. (US Army)

Iran

Following the Islamic Revolution of 1979, Iran turned to friendly Islamic states to replace equipment previously acquired from western sources. An initial 60 T-54s and 65 T-55s were delivered

from Libya in 1981, followed by 120 T-55s supplied by Syria in 1982. Type 59 tanks were also acquired from China and served alongside T-54/55s captured by Israel during the Arab-Israeli war of 1967 and subsequently sold off. Many T-54/55s were also captured from Iraq during the Iran-Iraq War of the 1980s and pressed into service.

Iraq

In 1958, following a military coup that toppled the Hashemite monarchy, the new republican government turned to the Soviet Union as its main supplier of tanks, taking delivery of 250 T-54s between 1959 and 1965. 50 more T-54s were ordered in 1967 from the Soviet Union and delivered in 1968. Between 80 and 120 T-54s were lost during the Yom Kippur War of 1973; replacements amounting to 300 T-55s were ordered from the Soviet Union and delivered during 1974/75. In 1950 50 T-54s and T-55s were ordered from East Germany and delivered in 1981. Further deliveries included 400 T-55s and T-54s from Poland, delivered between 1981 and 1982; 250 T-55s from Egypt, delivered between 1981 and 1983; 150 TR-580s from Romania, delivered via Egypt between 1981 and 1984; and 400 T-55s from the Czech production line, delivered between 1982 and 1985. Chinese Type 59s and 69s were also acquired from various sources. All Iraq's tanks were destroyed during the wars of the 1990s, or scrapped subsequently, except for a few retained by the reconstituted Iraqi Army.

An Indian Army T-55 on a firing range. (Indian Army)

An Iranian soldier perched on a T-55. (source unknown)

A Chinese-supplied Type 69 tank, a much-modified development of T-54A, examined by Coalition troops after the Gulf War of 1991. (US Army)

An Israeli Tiran-4 tank pictured in the Latrun Tank Museum. (Wikipedia Commons)

A Laotian Army T-54 preserved in a museum, Vientiane. (Wikimedia Commons)

Israel

The Israeli Defence Forces (IDF) captured hundreds of Egyptian and Syrian T-54s and T-55s during the Arab-Israeli War of 1967 and the Yom Kippur War of 1973. These were upgraded and featured equipment changes such as the replacement of the 10mm main gun with a 105mm weapon. The T-54/55was named Tiran (Tyrant) in Israeli service.

Laos

Fifteen T-54s and 15 T-55s were ordered in 1973 from the Soviet Union and delivered in 1975. Ten vehicles (a mix of T-54s and

T-55s) were reportedly still in service in 2017.

Lebanon

In 1992/93 the Lebanese Armed Forces took delivery of 180 T-54s and T-55s from Syria. These were former Syrian-operated vehicles, originally supplied by the Soviet Union.

Mongolia

Mongolia was an early customer for the T-54/55, receiving 250 T-54s between 1961 and 1964 and 250 T-55s between 1964 and 1967. In 2017 these still formed the bulk of the Mongolian Army's armoured capability, alongside about 100 T-62s/T-72s.

North Korea

The North Korean People's Army's armoured forces, which had previously been equipped with the T-34 tank, began a substantial upgrade in the late 1960s, when 400 T-54s and 250 T-55s were ordered and delivered from the Soviet Union between 1967 and 1970. A further 300 T-54s were ordered in 1967 from the Soviet Union and delivered between 1969 and 1974, these vehicles probably being assembled in North Korea. Fifty more T-55s were ordered in 1970 from the Soviet Union and delivered between 1972 and 1973, followed by another 500 T-55s (or Type 59s) ordered in 1973 from either the Soviet Union or the People's Republic of China and delivered between 1975 and 1979. In the 1990s North Korea developed an indigenous main battle tank, the Popkung-ho, which appears to lean heavily on Russian T-72 tank technology.

T-55s of the Lebanese Army.

North Vietnam

The North Vietnamese Army used both the T-54/55and the Type 59, 400 T-54s and 600 T-55s having been donated from Soviet stocks. However, the North Vietnamese continued to use its well-worn T-34s for some time alongside the newer tanks until the former were eventually replaced. In 2018 around 850 T-54/55s and 350 Type 59s were still on the active inventory, alongside more modern T-62s and T-90s.

Pakistan

Although 100 T-54s and 100 T-55s were delivered to Pakistan in 1968 by the Soviet Union, the principal supplier of main battle tanks to Pakistan was the Chinese People's Republic, which supplied around 450 Type 59s and Type 69s. By 2000 Pakistan's fleet of MBTs had risen to 1,200 Type 59s and 400 Type 69s, while the stocks of T-54/55s had dwindled to fifty. In 2015, however, Serbia

sold 282 T-55s to Pakistan from surplus stocks.

Sri Lanka

The Sri Lanka Armed Forces received 83 T-55s from Czechoslovakia/Czech Republic in the 1990s, in addition to about 100 Type 59s/69s from China.

Closeup of the turret and crew of a Lebanese Army T-55.

North Korean T-55 tanks on manoeuvres. (Via Del Lewis)

A North Vietnamese T-55 in Saigon, 1975. (Reuters)

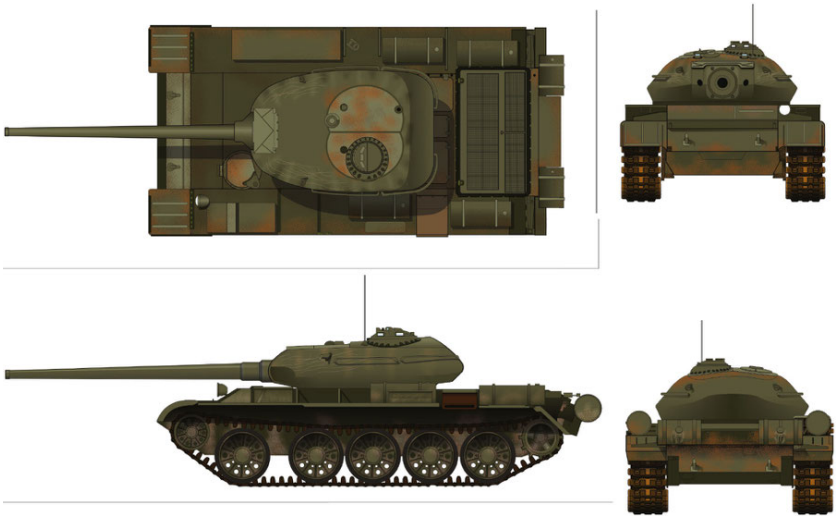
The Chinese Type 59, itself a copy of the T-54A, has remained Pakistan's principal main battle tank for decades. (Wikimedia Commons)

A T-55AM2 main battle tank of the Sri Lanka Army. (Sri Lanka War Museum)

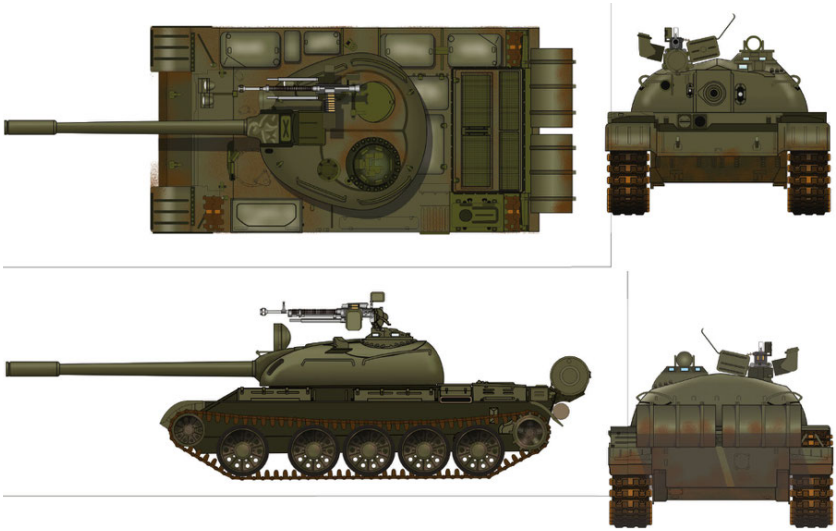
Syria

Egypt's principal ally in the Middle East, Syria, began to receive the T-54/55in 1957, the original batch of 150 T-54s shipped from the Soviet Union. Follow-up orders comprised 300 T-54s from Soviet reserve stocks and delivered between 1967 and 1972; 75 T-55s ordered in 1967 from the Soviet Union and delivered between 1967 and 1968; 300 T-55s ordered in 1968 from the Soviet Union and delivered between 1969 and 1972; 400 T-54s and 400 T-55s ordered in 1973 from the Soviet Union and delivered between 1973 and 1978, probably former Soviet Army vehicles; 600 T-55s ordered in 1978 from the Soviet Union and delivered between 1979 and 1981.

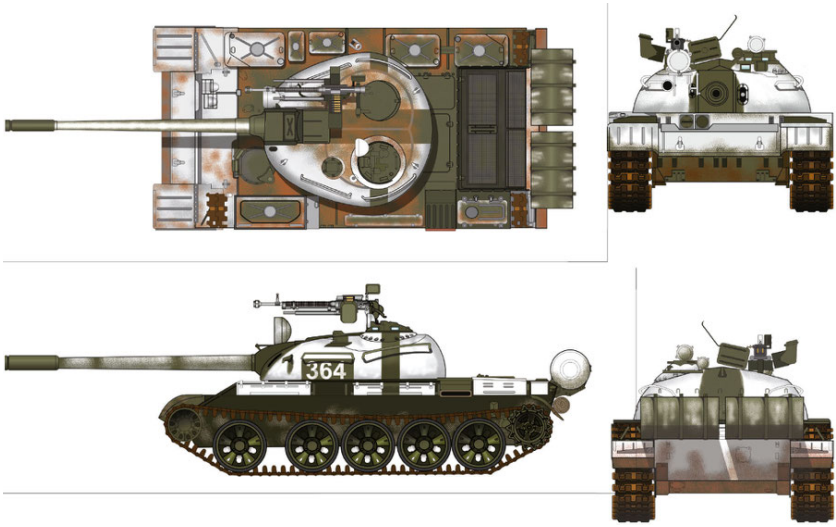
(continued on page 49)



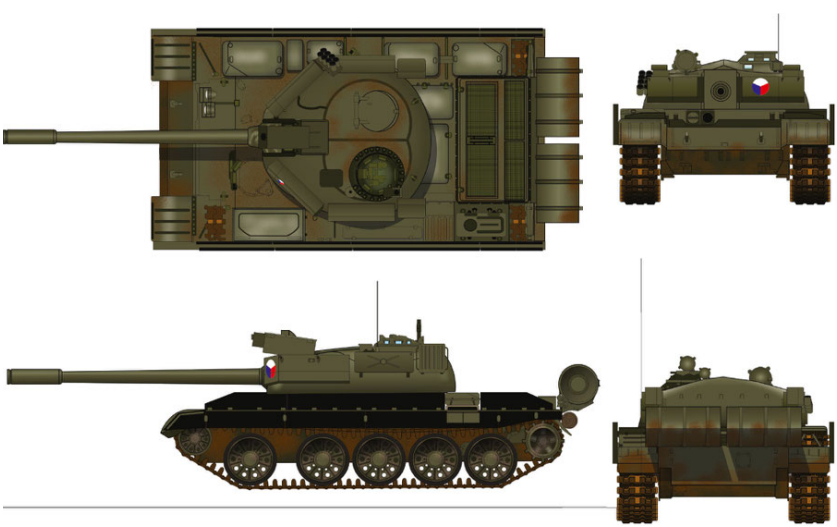
The prototype T-54 did not diff er greatly from its predecessor, the T-44, which in turn was essentially a reworked T-34. The overhang at the rear of the turret was soon identifi ed as a dangerous shot trap which would have produced a lethal explosion, as the engine bay was situated directly underneath. The fi rst production model, the T-54-1, was based on the second prototype T-54, but only a few were built before production switched to the much -mproved T-54-2.



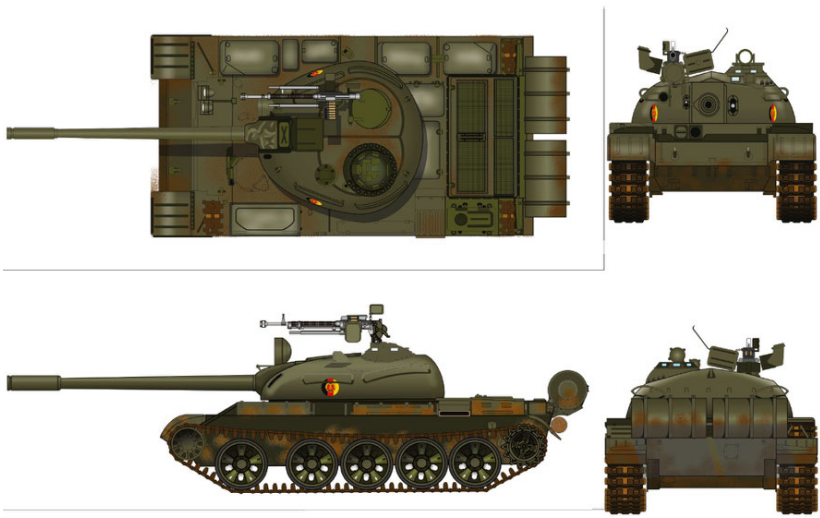
The T-54-3 was built in the USSR from 1952 to 1954 and in Poland from 1956 to 1964. It featured a new hemispherical turret and new TSh-2-22 telescopic gunner's sight instead of the earlier TSh-20. It also featured a distinctive fume extractor at the end of the gun barrel. The tank could use its engine exhaust smoke system to create a smokescreen by injecting vaporized diesel fuel into the exhaust system, a modifi cation that remained standard throughout the entire T-54/T-55 series.



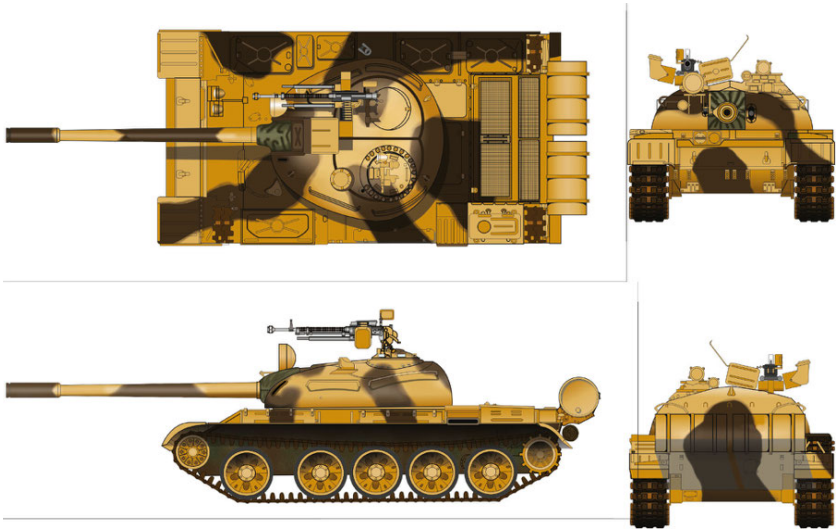
The T-55A (Model 1961), seen here in winter camoufl age, featured a new turret, nuclear blast protection and NBC system, gamma ray detector, an improved V-55 engine developing 580 horsepower with fuel injection, a power-assisted clutch, a compressor to allow pneumatic engine starting, and new internal fuel tanks with a capacity of 300 litres situated in the front of the hull, increasing the overall capacity of the internal fuel tanks to 680 litres.



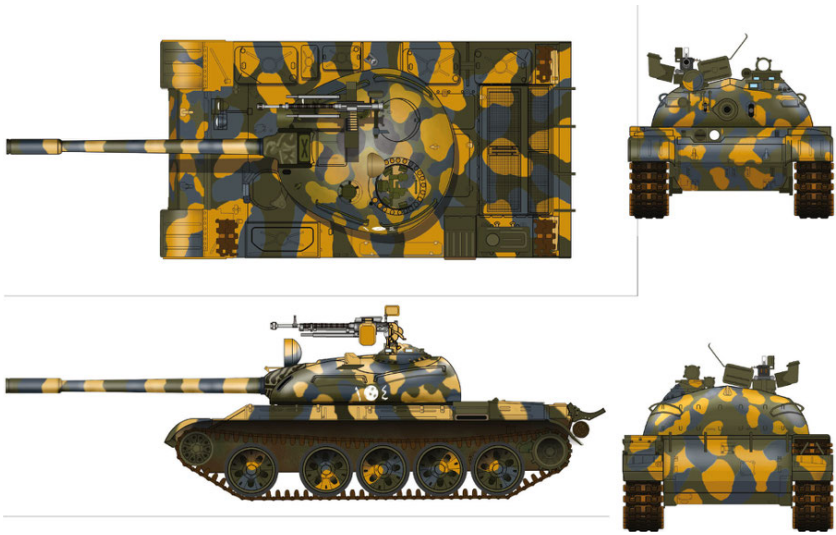
Czech-built T-55s, like this one, were of much higher quality than those produced in the USSR, and were much in demand for export. The Czechs modified their T-54/55s to produce the T-55AM2, with extra armour fitted to the hull and turret to provide extra protection against mines and anti-tank missiles.



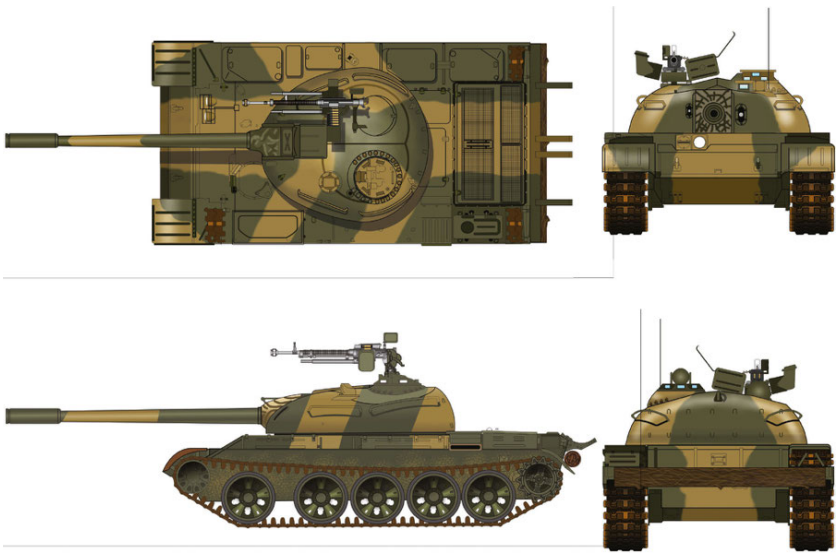
Most of the German Democratic Republic's T-54/55s were supplied by Poland and Czechoslovakia. The latter supplied 1,766 T-55s and T-55As, ordered in 1964 and delivered between 1964 and 1980, while 333 T-55s and T-55A(P) were ordered from Poland and delivered between 1965 and 1973. In addition, 362 VT-55 recovery vehicles were ordered in 1964 from Czechoslovakia and delivered between 1965 and 1969.



An Egyptian T-55 in the camoufl age scheme of sand and light brown adopted as standard during the Yom Kippur war of October 1973. Egypt was a major user of the T-54/55, its tanks undergoing many modifi cation programmes during their lengthy service. The T-55E (E for Egypt) shown here carries an AEG searchlight and a Yugoslav Iskra (Spark) laser rangefi nder.



A Syrian T-55. Vehicles delivered by the Soviet Union were generally still camoufl aged in standard Soviet Army dark green, which would have made them easy targets against a desert background, so the camouflage scheme seen here was quickly applied. This vehicle belongs to the 85th Mechanized Brigade, which supported PLO forces during their attempted takeover in Jordan in 1982.



An early production Chinese Type 59 Main Battle Tank. The Type 59 was a faithful copy of the T-54A, but with various items of equipment removed. For example, there was no IR searchlight and main gun stabilization system. The 12.7mm heavy machine gun was positioned above the loader's hatch.

This is the Tamiya T-55 with the Accurate Armor Enigma conversion. The base kit is typical Tamiya: a good fit with crisp detail that is a solid base for an upgraded project. The AA

conversion was a mixed bag, good detail but many broken parts (the whole conversion was thrown into one plastic bag, although this may have been because it was purchased second hand, so the original might be better) and some huge air bubbles. Never the less it was usable and with care it worked out well.

The main gun barrel is aluminum, made by FineMolds.

The kit offers rubber band tracks which were not suitable so Trumpeter workable tracks were used. They are a bit of work but a better representation. The two different barrels on the back are ‘modeller’s license’: one was for spare fuel, and the other (blue) was for water, in the desert the water would possibly be more valuable

than fuel.

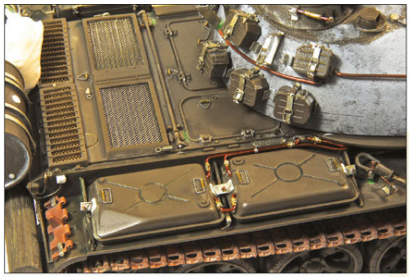
The coil springs for the left front turret armor are scratch built from a strand of wire salvaged from a wire tow cable. The conversion came with resin springs, but they did not look adequate.

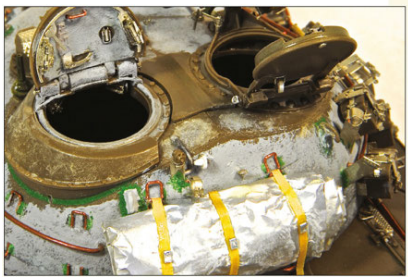
The whole tank was first sprayed with Model Master Russian Topside Green, followed with a coat of hairspray. After that it was given a coat of Model Master US Army/Marine Sand.

For the weathering some of the sand on the base T-55 was picked off (not the Iraqi conversion) to depict paint chipping off the less

durable sand paint. On the conversion parts chips with rust underneath seemed most appropriate.

The Tamiya T-55A has been around since 2002 and still builds into a respectable model with a few additions from an Aber PE sheet; RB barrel and Model Kasten tracks lifts it considerably. A Soviet machine requires less work, needing only the deep wading frame to be scratched from Evergreen angle. Many photos and different reference sources helped with construction along the way.





A few extra Meng 0.8mm bolt heads were added using reference photos as a guide as were fuel lines constructed from 1mm copper wire and brass tubing. Hose clamps are provided on the Aber set. A couple of tarps were added, the one jammed in between the rear fuel drums is a piece of folded facial tissue soaked in diluted PVA / white glue. The turret mounted one is made from Milliput, rolled flat, cut to size and then rolled inside a piece of kitchen foil. It was pressed into place and allowed to harden with Tamiya masking tape straps holding it in place. The tie downs are simply 0.4mm copper wire bent and cut to size.

Other areas of improvement were the replacement of the moulded-on power conduit to the search light with a length of solder and electrical cables made from thin copper wire. The periscope lens is

filled in with Testors Clear Part Cement applied with the tip of a needle, PVA will also do the job as it too dries clear.

The model was primed and finished off with Tamiya XF-58 Olive Green, oils and enamels took care of the weathering. 'Oregano' leaf litter spiced things up a bit and was coloured with thinned oils.Everything was sealed with Tamiya XF-86 Flat Clear followed by some X 19 Smoke fuel stains and black pastel applied to the exhaust. Finally a 2B pencil was rubbed over the tracks and other high wear places to replicate bare steel.

778

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This Takom Tiran 4 kit fi ts together well. It is painted with Ammo by Mig Paints (Sinai Grey 73), washes (Brown for Yellow vehicles) and rain streaks, although streaking grime has also been added. The

kit only comes with the V-marking decals and the three stripes for the barrel. The only after market piece used is a metal barrel. The tools are painted using Vallejo Model colors (they work the best for brushing). It is dry brushed with Tamiya's weathering master A-kit sand and light sand.

130374

T-54

Finnish Service, 1980s

1/35 Scale

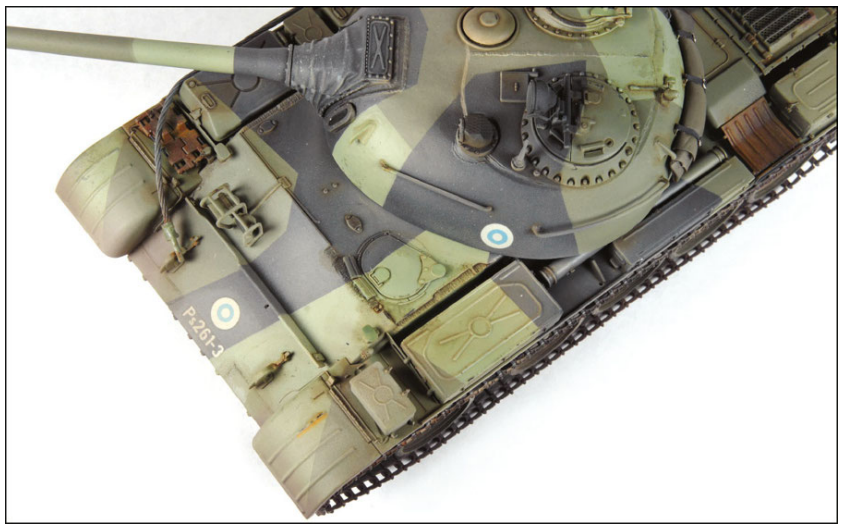
William Stewart

This was a fun project, a departure from what is normally strictly Second World War era subject matter for me. There were many ‘firsts’ for this build: post-war vehicle, Soviet-built tank, Finnish subject, and my first experience with a Takom kit. Overall I liked the Takom experience of great packaging design, beautifully printed documents, and well-detailed kit. I did however question the engineering and moulding of some parts, most notably the wheels and tires. One of the reasons I chose to use this kit was that it offered individual link tracks, but in the end I thought the Modelkasten offering was a timesaver and detail-enhancer. I would recommend the kit to advanced modelers, but if one wanted a quicker, easier build I would go with the Tamiya T-55.

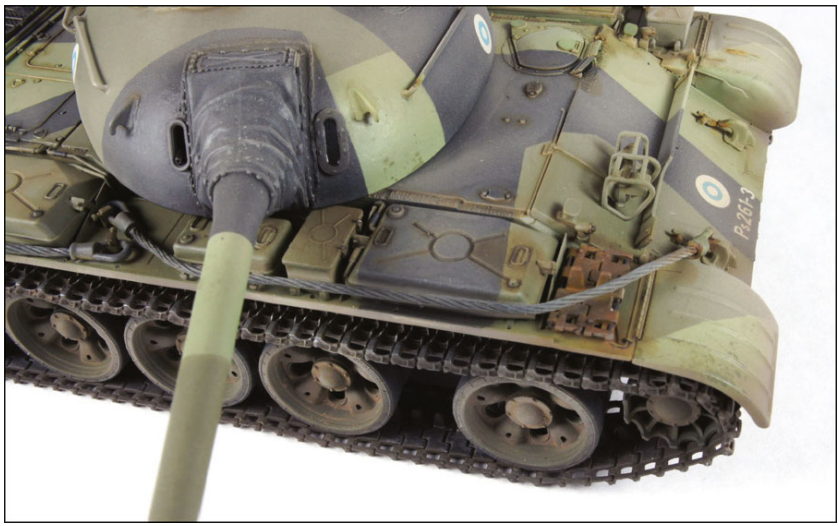
The kit comes with a pack of nicely detailed individual track links similar to Dragon's Magic Tracks. I wanted to have tracks that draped well from drive sprocket to idler wheel, so I chose to go with an aftermarket set of Modelkasten tracks. The Modelkasten tracks are a tedious endeavor to assemble, but require virtually no cleanup, and once assembled behave like real tracks in their flexibility.

The most prominent feature on this model is the huge 100mm cannon. I am always eager to replace plastic barrels with aluminum. I used an Aber barrel that comes complete with photo-etch welds to detail the fume extractor, though I decided to skip the additional headache of working with tiny photo-etch parts.

Takom includes two hull versions with slight variation of design for either a T-55 early or T54 late. The swing arms are delicate and nicely detailed and fit the hull well. The tires are moulded as separate parts.The tread pattern is overdone, and the large sprue attachment points are difficult to clean up without destroying the tread. The seam between the wheel and tire is in the wrong place, requiring sanding and filling to correct the defect. I then sanded most of the tread pattern off of each tire to create a more realistic worn tire appearance. The fit of the roadwheels was a bit sloppy, and required setting up a jig to ensure the wheels were properly aligned and square to the hull and ground.

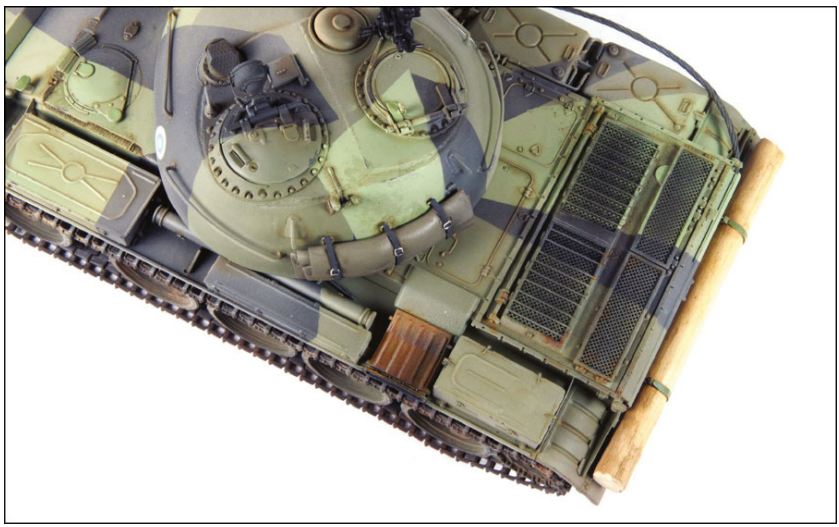


I decide not to use the IR lamp that is mounted on the turret adjacent the mantlet, which required removing the moulded-on electrical conduit running to where the lamp was to be installed. The back side of the turret features two rows of tie down brackets that are moulded too thick, and so I replaced them with thin gauge copper wire. The hatches are very nicely detailed assemblies and the commander's hatch can be a built to open and close.



The turret features a nice cast texture and weld detailing along the turret roof. Takom supplies a soft vinyl mantlet shroud, however it's nowhere near flexible enough to allow for the barrel to move up and down. The barrel was glued in position, and the shroud glued in place with superglue.

Once I'd added the upper hull, I decided to take a detour to paint and weather the running gear and lower hull in order to facilitate the final painting at a later stage. The fenders required some opening of locating holes for tools from underneath as well as the filling of some knockout pin holes. I added some dried mud texture to the sides of the hull and undersides of the fenders, masked above the fender line, and airbrushed a coat of Tamiya XF-58 Olive Green.



One of the most recognizable features of this tank is the large drum fuel cannisters mounted on the rear of the tank, however none of the Finnish T-54s or T-55s had them fitted in the photos I found, and so I decided to leave them off. Instead, I focused on replacing

the kit unditching log on the rear with an actual wooden stick.

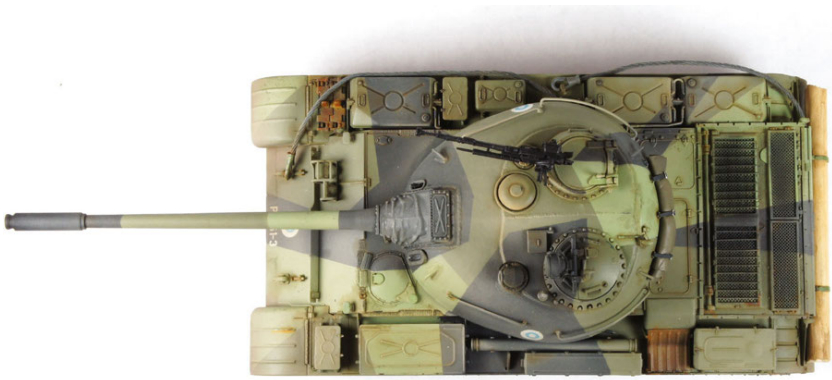
The fuel tanks located along the right fender have a number of very delicate fuel lines that require a lot of careful cleanup before installation. The kit comes with a length of very pliable wire that works very well for forming the appropriate curves and bends of the tow cables. Take care during assemby not to cut your wire too short, as the cable ends are already glued in place.

The most exciting and perhaps the most challenging part of this project was to replicate the splinter camouflage scheme I had seen

in the original photos of Finnish T-54s. I chose to mix my own colors, using combinations of various Tamiya greens, greys, yellows, blue and black to achieve the two hues of green.

The final step of the project was to assemble the delicate but well detailed DShKM machine gun, which was painted flat black then treated to graphite detailing with a No. 2 pencil to give it a metallic look.

Star Decals offers a sheet of markings for T-54/55s in Finnish, Czech, Polish, and Romanian service. The simple blue/white Finnish roundels and unit markings are a somewhat understated but the Star decals were the perfect accent for the build.



Weathering was achieved through several types of washes using various colors of Windsor Newton oil paints. The first wash was highly thinned raw umber applied to seams, part lines, bolt heads, etc to help to create shadows and/or the buildup of filth. Subsequent washes of dirt, dust, and rust were applied on various surfaces being careful not to overdo things and create the look of a tank battered by combat. I wanted to present well-maintained vehicle that had gotten dirty while out in the field on maneuvers so chipping was kept to a minimum. Worn spots were detailed with graphite, but again were kept to a minimum. The faces of all periscopes were painted black, followed by a few coats of Future to provide a glossy surface.

The T-54/55has been available to modellers for many years but not with a great degree of choice. Tamiya made the first full kits available in the mid 1960s, rivalled only by Nitto at the end of that decade with a single offering, the T-55 Commander. In 1974 Tamiya released the last of these iconic medium tanks for almost 30 years. Lindberg Model Kits stepped into the breach in the late 80s with a T-55 kit accompanied by ESCI/ERTL who released a T-55 and T-55A (M) in the early 90s, the former was reboxed by Italeri in 2004. (Italeri released a Chinese Type 59 in 2015 but nothing further.) Soviet tank modellers breathed out at the end of the millennium when Trumpeter, a large mainstream manufacturer, came on board realeasing their series of T-54 and T-55 kits as well as the Chinese Army types. In 2000 SKIF released three plastic models, the T-54, T-55 and T-55AM. Further releases saw a T-55AD1 by UM Models and the further population by Trumpeter of its ever-growing series, some of which were reboxed by Hobbycraft and Avangard Armour. In 2003 Tamiya resurfaced, adding the T-55A which they re-released in 2011 after which they released the Enigma and Tiran-5 too. SKIF was also adding T-55 variants to their catalogue and reboxing older kits, sizeably growing the series until 2016. In the meantime Hobby Planet released their only 1/35 scale resin kit of the 1951 T-54. In 2016 Takom joined Tamiya and Trumpeter as a mainstream manufacturer, steadily releasing a

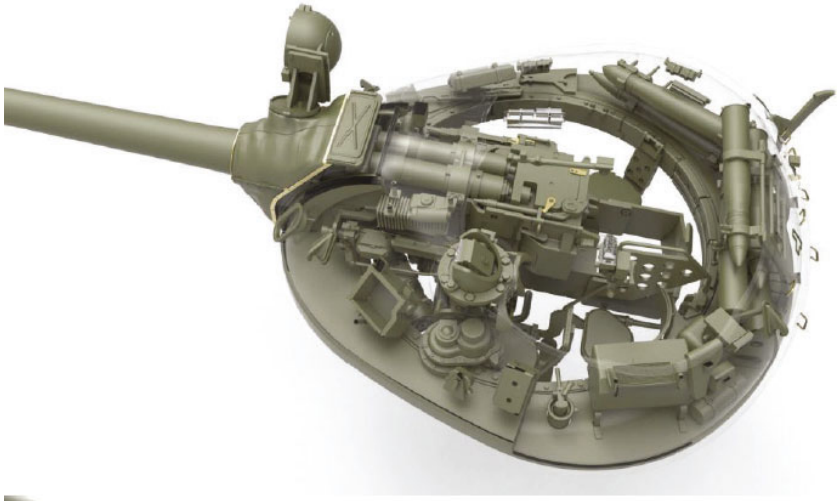
complete series of T-54 and T-55 types. MiniArt came onboard the same year as Takom, adding an impressive, complete series of this much-produced medium tank which has seen service over many years and across many theatres. Revell has only released one kit of this tank, a 1/72 scale T-55A, at the same time that takom and MiniArt got going.

MINIART

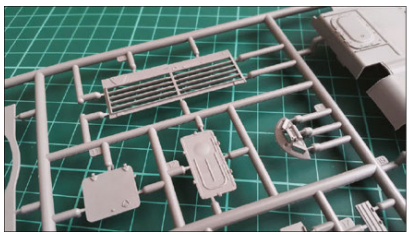
MiniArt Limited is a Ukrainian injection plastic models manufacturer. It produces 1/35 scale models of the T-54 1,2 and 3 as well as the T-54A and B. The T-55A Early Model has been available from Jaurary 2018 following on from the release of their T-55 in the latter half of 2017, they also do a couple of Tirans. Their kits are available with or without the full interior. MiniArt kits are sprue heavy so you'll need to have a system in place as you unpack the box of cataloguing and storing the numerous sprues so that they're to hand when you need them. With several hundred plastic parts and a hundred-odd brass parts these kits are a feat of model enginerring. The plastic parts are festooned with crisp detail and the fit is very good. Note though that a more precision instrument than a sprue cutter is necessary for the many fine parts held in place with many sprue attachment points. Modellers agree that MiniArt T-54 and T-55 kits are not suitable for beginners, they are challenging builds with intricate detail, but with patience and perseverance the effort is well rewarded.

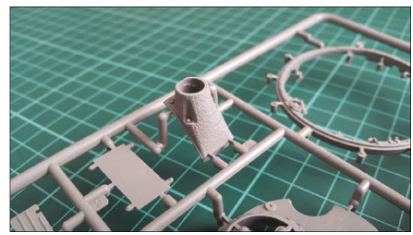
Courtesy of www.miniart-models.com.

MiniArt provides the modeller with four marking options. All are for Soviet/Russian vehicles, three in standard Soviet Green and one in a green/ white winter scheme. (Courtesy of www.miniart-models.com)

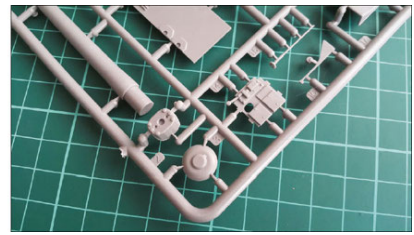


This 3D render of the turret clearly shows the interior parts. The transparent turret is for the purposes of this view only, it is not available as such in the kit.

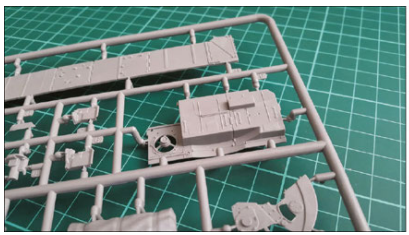


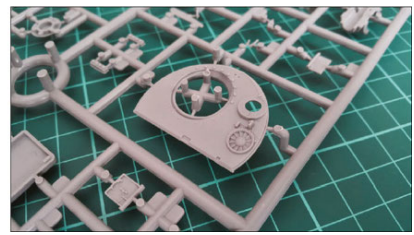


Light gray plastic, is the standard for MiniArt's newest kits, its plastic material is flexible and very pleasant to work with. The detail on the sprues is second to none. (Images courtesy of DN Models)



These sprues clearly show welding lines and model detail. (Images courtesy of DN Models)



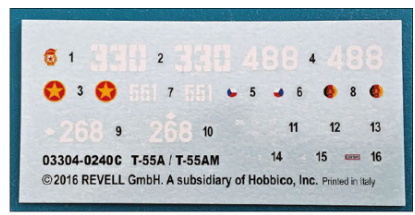


The sprues show the single-piece gun barrel and very thin fenders. (Images courtesy of DN Models)

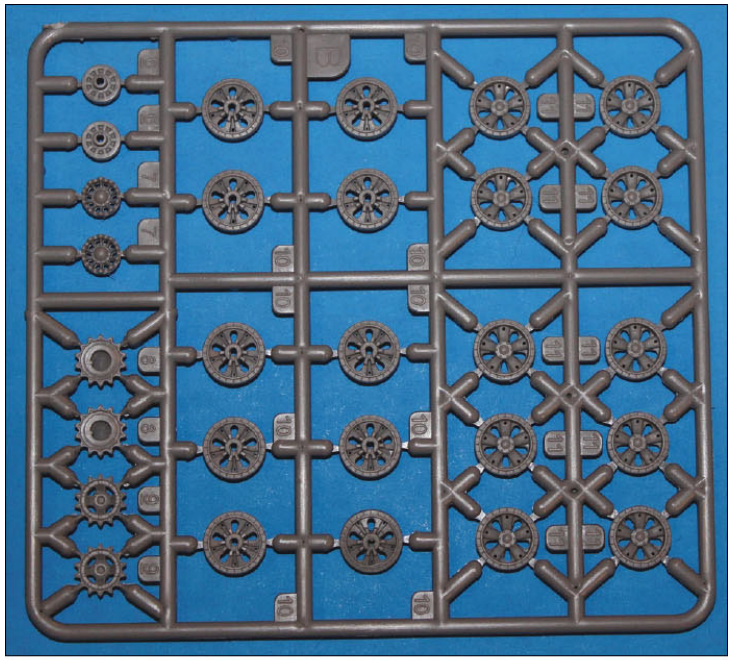
REVELL

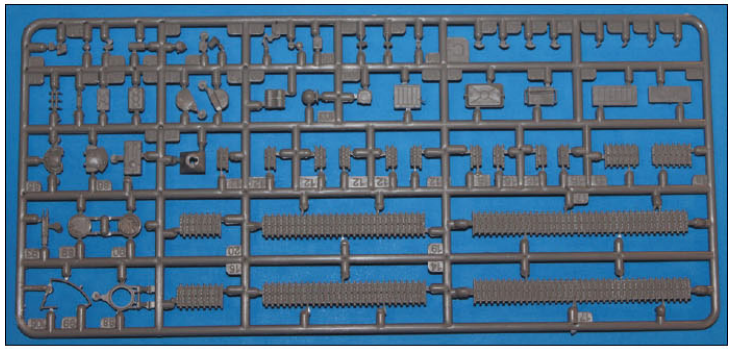
Revell offers a 1/72 scale T-55 plastic model kit with two options. Before commencing the 29 build stages you'll need to look at the marking options and decide which you're going to go with. This is because there are a number of points where you need to drill out locating holes, appropriate for whichever variant you are building.

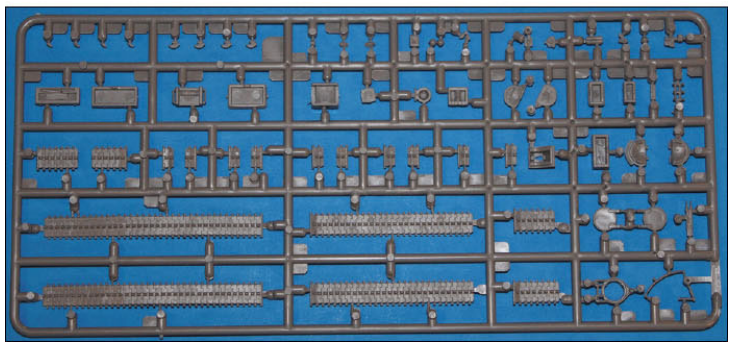
Of the four marking options, the first two are for the T-55A. Option 1 is for an example serving with the 6th Guards Tank Division, 78th Guards Tank Regiment as part of the Group of Soviet Forces in Germany (GSFG) at Wittenberg, 1975. Option 2 is a T-55A serving as part of the 273rd Tank Regiment of the People's Army of Vietnam at Pleiku. Option 3 is for a tank of the 14th Tank Division, 60th Tank Regiment in the Czechoslovak People's Army, at Kezmarok, 1985. The last option is for a T-55AM of the 7th Tank Division, Tank Regiment 15, in the National People's Army of East Germany at Cottbus, 1990.



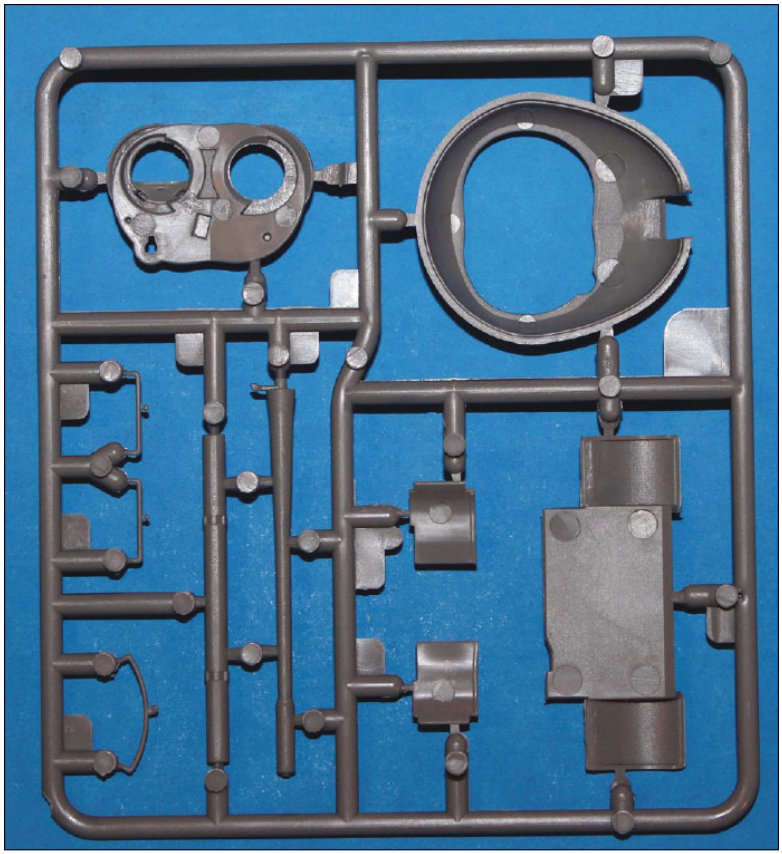
Four decal options are provided.

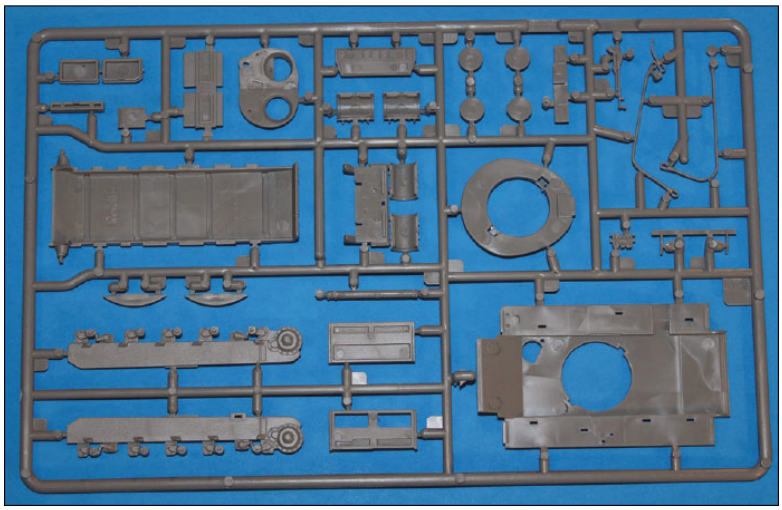






Offers a choice to build the T-55AM or the T-55AM2B (NVA).
Includes injection moulded tracks with individual sections.

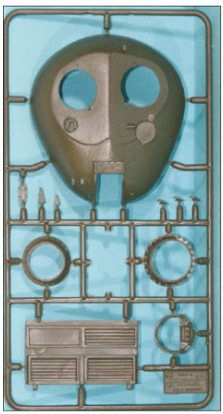


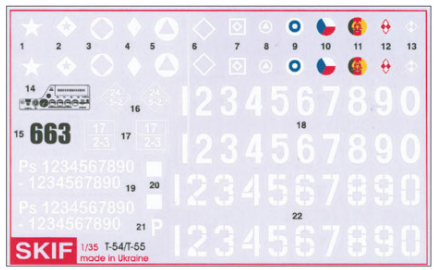


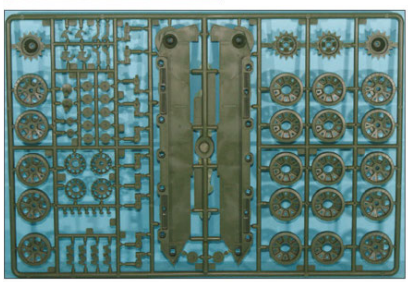
Additional turret armour and a rotatable turret.

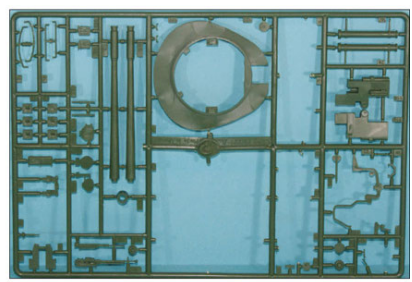
SKIF

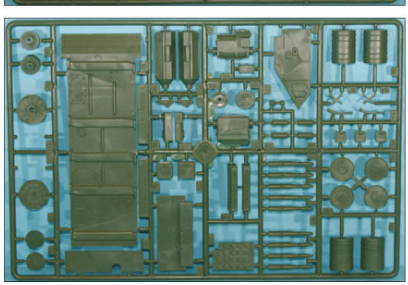
SKIF is a Ukranian scale model manufacturer and developer that produces models in 1/35 scale. Over the years it has released 10 kits in their range of T-54s and T-55s: the T-54/A, T-55A/AM/C1/C2/with BTU-55 and Tiran 4/5/5Sh. These kits never got the credit they deserved; the T-55A, their first release, came out just prior to Tamiya's of the same variant, and as a result took a lambasting. However, some modellers believe it got a bad rap and although the models do have some flaws they are dimensionally accurate.

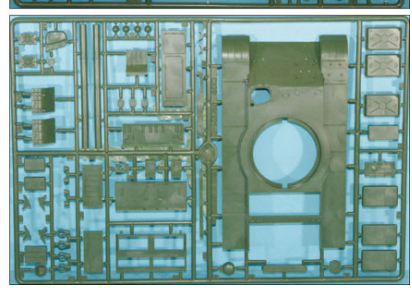








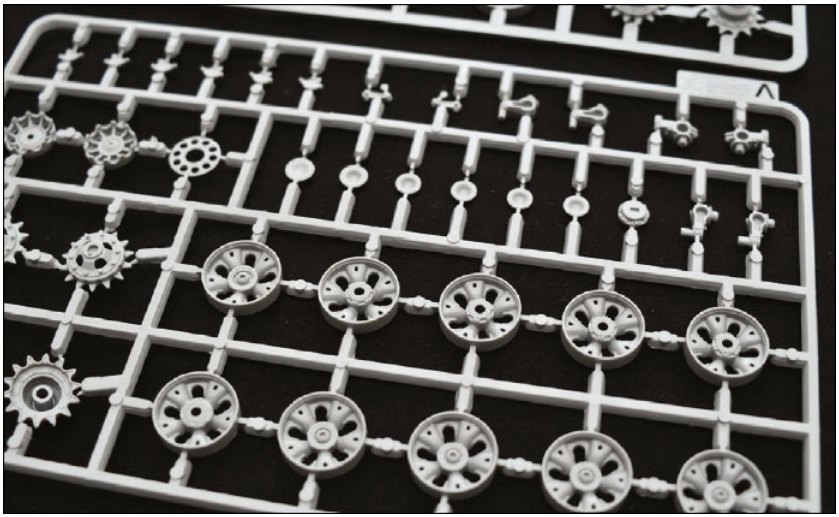




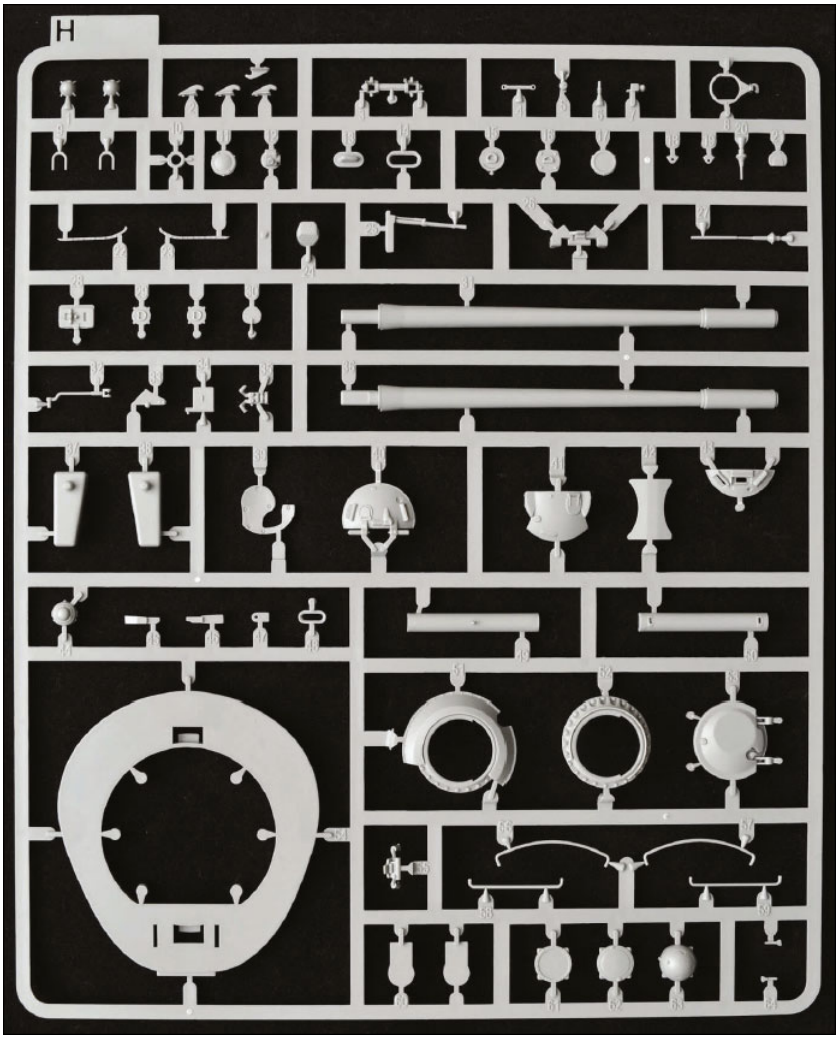
Among the new parts, aside from the turret, this kit has a rear turret basket, night vision system, and laser rangefinder. Markings are provided for the Egyptian example as well as markings from other T-54 releases. (Images courtesy of www.cybermodeler.com)

TAKOM

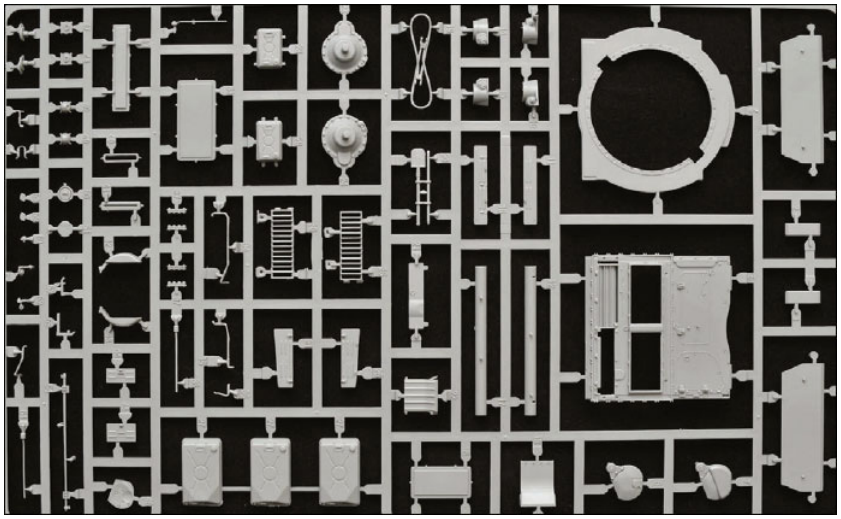
Takom is the first to release a 1/35 scale styrene, or pre-moulded plastic, kit. The T-54B (Late Production) kit provides two engine decks and two kinds of wheels: the early ‘spider’ finned cast wheels or the later ‘starfish’ five-spoke cast wheels. A drawback to annoy the purist is the strange details on the styrene tires and ejection pin marks on each track link but a few minutes with a sanding stick will eliminate most of the overwrought rubber seams molded into the tires and links. The T-55 kits include the variants A, AM, AM2B and AMV and Takom has even provided the fuel lines for the external fuel tanks. There are four finishing options for these kits: Russian Marines, Angolan Armed Forces, Cuban Army and the Russian Army. Takom also offers modellers a range of the Chinese-styled T-54s: the Type 59, decals are supplied for the Chinese Army, the Pakistani Army and the Viet Cong in 1974 and 1975; the Type-69 I, Chinese Army decals, and II, available in an interesting variety of decal options: Iraqi Army Operation Desert Storm of 1991 and Iragi Freedom of 2003, the Royal Thai Army and the Iranian Army from the Iran–Iraq War.



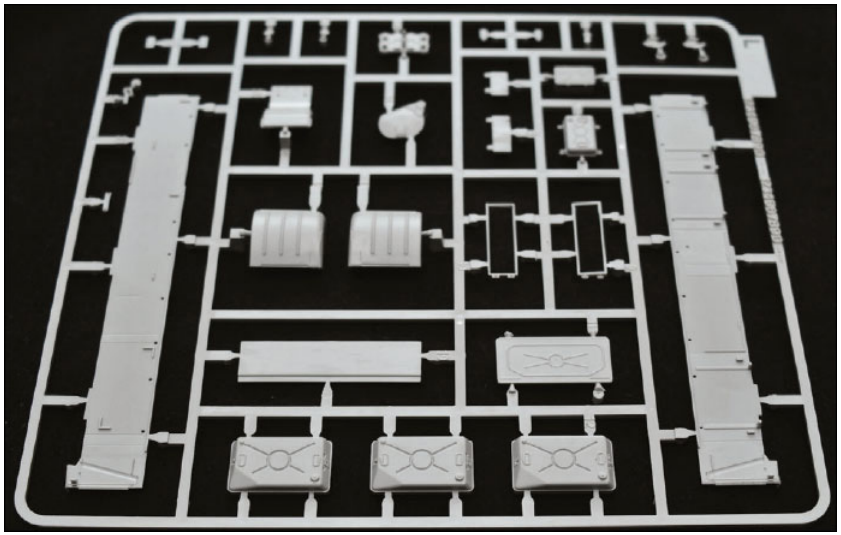
This sprue shows the main road wheels, the idlers, the drive sprockets and suspension components.



The turret base, barrel (that comes in two parts, so some sanding will be required) and some details like hatches.



This is a sprue with all basic hull details, engine cover, fuel tanks for the fenders and the pipework for them.



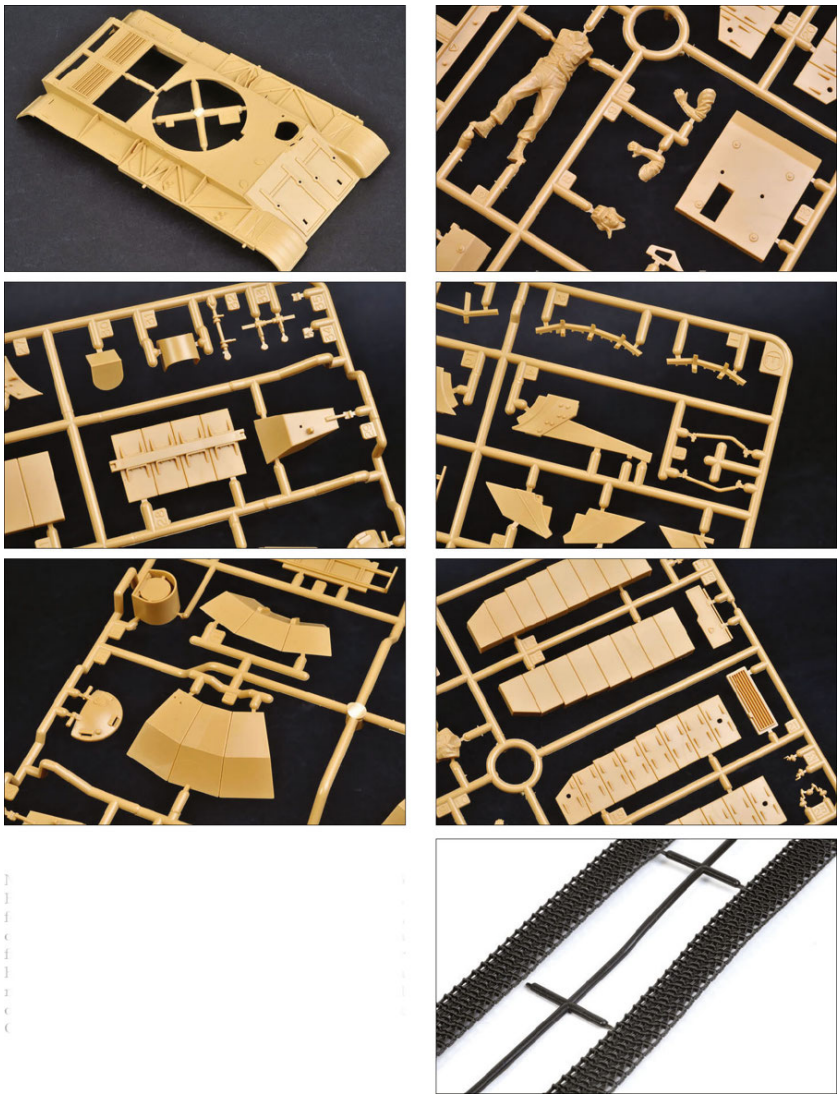
Fenders and fuel tanks. From this angle one can see the curve of the fenders.

A beautifully moulded cover.

TAMIYA

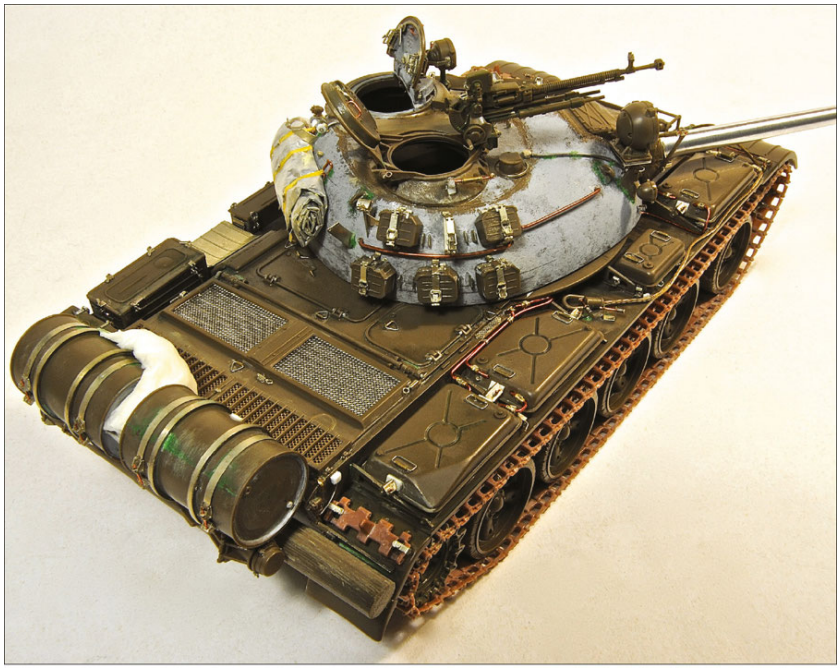
Tamiya presents the 1/35 scale plastic assembly kit of the Russian Medium Tank T-55A. The unique form of this tank has been accurately replicated. You can choose between several versions, with or without a DShK-M anti-aircraft machinegun, of the T-55 and T-55A. You will also be able to represent Polish or Czechoslovakian built versions. Every characteristic of the T-55A such as the engine grills and external fuel tanks has been reproduced down to the finest detail. One tank crew chief figure and decals for 5 different markings are included. Tamiya's T-55 Enigma is a logical development of their excellent T-55 kit, and should prove to be just as enjoyable to build as its predecessor, however link and length tracks would have been nice. It is an injection moulded mainstream kit, is a straightforward build, has a

high level of detail and many new 2012 mouldings.



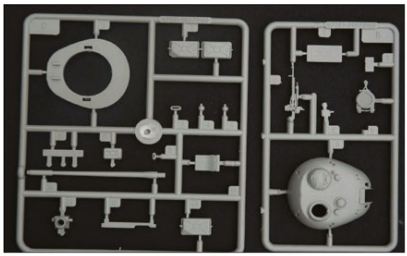
Now moulded in dark yellow, Tamiya's 1/35 scale T-55 Enigma comprises approximately 382 plastic parts, four large polythene caps, ten small polythene caps, one small sheet of vinyl mesh and two full-length flexible vinyl tracks. Two of the sprues and the

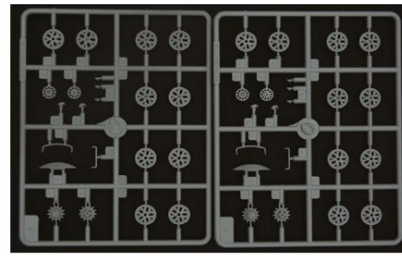
upper hull are brand new, while the turret has also been modified to accommodate the armour segments and other fittings. (Kit component images courtsey of Brett Green www.missing-lynx.com)



TRUMPETER

If you're looking to model one of the Chinese Types then Trumpeter may be your go-to kit. In 1/35 and 1/72 scale they offer the Type 59 medium tank with or without the 120mm gun, a B variant with a 105mm gun, a D variant with reactive armour, a Type 69-II medium tank (also available in Iraqi service), a Type 79 with 105mm gun and a Type 80 MBT. Of the more genric Russian models they offer a T-54A and B (1951 and 1952 respectively), an Israeli Ti-67, a Finnish Army T-55 with KMT-5 and a Russian T-55 (1958). Variations of the T-55 are with mine roller or with BTU-55 dozer blade. Trumpeter's kits can be summed up as a series of sprues, some large ones designed so that all or some parts are moulded so that the combination of parts varies to produce the main components of the tank, and other smaller ones with details to produce the different types. Thus a wide range of kits is possible but concessions are made on accuracy. Moulding is generally good, with a nice cast texture to the turrets and some neat detail, however when fitted to the hull the turret is too far back. The hull is also a bit long and there is only one style of engine deck. Trumpeter claim that their parts (including the tracks) can be glued with the normal plastic cement but modellers have found otherwise. However, these are issues that can be overcome with hard work and ingenuity. In the main, the scope of the Trumpeter series is what puts it on the map, not its precision.





(Courtesy www.scalemodelersworld.com)

Two Syrian Army T-55s pictured on the Ithriyah-Raqqa Highway in June 2016. (Abkhazian Network News Agency)

Africa

Algeria

Following Algeria's independence from France in the 1960s, the Soviet Union became the country's main supplier of tanks, starting with 40 T-54s in 1963. Twenty-five more T-54s arrived in 1966, together with a similar number of T-55s. A further 100 T-54s and 100 T-55s were delivered in 1967, with 50 more T-55s following in 1982.

Angola

The T-54 and T-55 first made their appearance in Angola in the mid-1970s, replacing the Cuban-supplied T-34s which had engaged South African forces during the Angolan civil war. The first deliveries from the Soviet Union, over 1975–78, involved 150

T-54/100 T-55s. A further 100 T-55s were delivered in 1987/88. Small batches of T-55s were delivered thereafter, some coming from Bulgaria, and in 1999 a large delivery of 205 T-55AM2s was made by Slovakia, these vehicles having previously been in Czechoslovak/ Slovakian service. About 260 T-55s were still in service with the Angolan Army in 2017.

Eritrea

Eritrea received some 300 T-54/55s from various sources, including 120 T-55As delivered in 2005 by Bulgaria.

Ethiopia

Ethiopia took delivery of about 400 T-54/55s from various sources, a total that eventually rose to 600. The tanks were deployed in the war with Eritrea in the 1970s.

A T-55 of the Algerian Army. (via J. R. Cavanagh)

An abandoned Angolan T-55 photographed in 2007. (Reddit)

A T-55 destroyed during fighting on the border with Somalia. (source unknown)

The shot-up wreck of a T-55 in Ethiopia. Note the shell impact at lower right, which has failed to penetrate the glacis. (source unknown)

Libya

Libya received around 500 T-54/55tanks from the Soviet Union. About 200 were captured by neighbouring Chad when Libya became involved in Chad's civil war in 1987.

Morocco

Morocco was an early customer for the T-54, having received 40 T-54Bs in 1962. Eighty more T-54s were delivered in 1967/68, all from Czechoslovak production. Many of the tanks were lost during the Yom Kippur War of 1973, in which Morocco took part as a supporter of Egypt, or in clashes with Algerian forces in the Western Sahara in the 1980s. All the surviving tanks were later scrapped.

A Free Libyan Army T-55 pictured in 2011 during the civil war that ended in the collapse of Colonel Gaddafi's regime. (Reuters)

A T-55 tank of the Nigerian Army at Konduga, pictured during the fighting with Boko Haram insurgents. (Vice News)

Mozambique

Mozambique received 60 T-54s from the Soviet Union in the 1970s, followed by a further 60 in 1981 and 50 in 1983. Another 60 T-55s were ordered in 1984/85. Around 50 T-54/55s were thought to remain in service in 2017.

Nigeria

Between 50 and 100 T-55s were ordered in 1979 from the Soviet Union and delivered in 1981. Twenty-four vehicles remained on the active inventory in 2017, although the T-72 had taken the T-55's place as the main fighting vehicle.

Somalia

The Somali Army received around 200 T-54/55s between 1973 and 1977, the majority former Soviet Army vehicles but 35 acquired from Egypt. Fifty were still on the inventory in 2017.

Sudan

Fifty ex-Soviet T-54s and 50 T-55s were ordered in 1969 from the Soviet Union and delivered between 1969 and 1970. Nine T-55s were ordered in 1996 from Belarus and delivered in 1996. Twenty T-55AM2BPs were ordered in 1998 from Poland and delivered in 1999 (these were from the first batch of 50 originally sold to Yemen and illegally diverted to Sudan, after which the delivery of the remaining 30 was put on hold). Belarus supplied a further 60 T-55Ms ordered during 1999– 2001. All were eventually replaced by T-72s. Sudan also produced a copy of the Chinese Type 59 named Al-Zubair.

Uganda

Uganda received an initial 16 T-54s from the Soviet Union in 1975.

Sixty T-55s were provided by Ukraine in 1995, which supplied a further 52 in 1998. Another 28 T-55s were acquired from Bulgaria in 1998, and ten more from Belarus in 2000.

Yemen

Yemen began to receive the T-55 in 1994, when six tanks were acquired from Bulgaria. These were followed in 2000 by 97 T-55s and 35 T-55AM2s from the Czech Republic, delivered during 2000–2002. Acquisitions from other sources brought the eventual total up to 800 T-54/55s.

Latin America

Cuba

One hundred former Soviet Army T-55s were received in 1963 from the Soviet Union as part of an aid package. Over the next ten years Cuba took delivery of 1,200 more T-55s, delivery being completed in 1975. Some 800 T-55s were still active in 2018, alongside 380 T-62s.

Nicaragua

Twenty T-55s were ordered in 1981 from an unknown supplier (possibly Libya) and delivered in the same year. Sixty-six more were ordered from the Soviet Union and delivered in 1984, followed by two further batches of 20 and 50 from the same source in 1985 and 1987. About 60 were still on the active inventory in 2017.

Abandoned Somali T-55 tanks discovered by American forces near Mogadishu in 1993. (US Army)

The Al-Zubair, a Sudanese copy of the Chinese Type 59. (Wikimedia Commons)

A T-55 of the Uganda People's National Defence Force. (Wikimedia Commons)

A T-55 of the Yemeni Army. (Wikimedia Commons)

A lineup of Peruvian Army T-55s. (Andina News Agency)

Peru

Peru was a major customer for the T-54/55. Following an initial batch of 24 T-54s delivered by the Soviet Union in 1973, 250 more were received between 1974 and 1975. Further acquisitions brought the eventual total of T-54/55s in service to 375. By 2018, the number of T-54/55s on the inventory had decreased to fifty.

A T-55 of the Nicaraguan Army on parade. (source unknown)

A Cuban T-55 captured by South African forces in Angola.

T-54/55 Specialist Variants

A ZSU-57-2 self-propelled anti-aircraft gun. The designation ZSU stands for Zenitnaya Samokhodnaya Ustanovka (anti-aircraft self-propelled mount). The '57' denotes the calibre of the armament in millimetres. (Wikimedia Commons)

During its long operational career, the T-54/55chassis evolved into literally dozens of specialist vehicles, many of them local modifications carried out by the armies of the countries listed above. Most were engineer vehicles, but others were adapted to mount weaponry. Foremost among these was the ZSU-57-2 selfpropelled anti-aircraft gun (SPAAG), a T-54 chassis with a new turret fitted with twin 57mm automatic cannons. The turret had a

full 360-degree traverse and carried 316 rounds of ready-use 57mm ammunition. Another anti-aircraft modification was the T-55AM Marksman, comprising twin 35mm Swiss-made Oerlikon 35mm cannon mounted on a Polish T-55AM chassis. Apart from the chassis, Marksman was a short-range air defence system developed by Marconi in Britain. The Finnish Army was the sole operator.

During the Second World War, the Soviet Army had made widespread use of selfpropelled tank destroyers, based on the chassis of the T-34 tank. The trend continued in the post-war years with the appearance in 1955 of the SU-122-54, based on the T-54A. The SU-122-54 had a modified chassis, with small spaces between the first, second and fourth pair of wheels and a large gap between the third, similar to the T-62's and a superstructure, built into the hull, housing the 122mm D-49 L/48.4 gun for which the vehicle carried 35 rounds. The secondary armament consisted of two KPVT heavy machine guns, one mounted as an anti-aircraft machine gun near the commander's hatch and the other mounted coaxially with the main gun. The vehicle carried 600 rounds for the machine guns. The main gun had a fume extractor positioned right behind the muzzle brake, though some vehicles did not have the fume extractor. Other variations included a different commander's cupola. Seventyseven examples were produced between 1955 and 1957.

A Finish Army Marksman short-range air defence system, based on a T-55 chassis.

The first version of the T-54/55series to be employed as an armoured recovery vehicle (ARV) was the BTS-1, the appellation BTS denoting Bronetankoviy Tyagach Sredniy, or Medium Armoured Tractor. The BTS was basically a T-54A with the turret removed and equipped with towing gear. The BTS-2 was a modified version fitted with a hoist and a small folding crane with a lifting capacity of three tonnes. The vehicle entered service in 1955 and several sub-variants were produced, culminating in the BTS-4, which was generally similar to the BYTS-2 but equipped with a wide snorkel tube to enable it to ford waterways. It was also known as the T-54-T.

An SU-122-54 tank destroyer. (source unknown)

An MTU-20 Bridgelayer seen in the tank museum at Latrun, Israel.

Another T-54/55engineer variant was the T-54MTU Bridgelayer

which featured a twin-treadway superstructure mounted on a modified T-55 chassis. Each treadway comprised a box-type aluminium girder with a folding ramp attached to both ends to save space while the bridge was in the travel position. When set up, the bridge was 20 metres long. The span was moved out over the launching girder until the far end reached the far bank. Next, the rear end was lowered onto the near bank. This method of launching gave the bridgelayer a low silhouette, which made it less vulnerable to detection. The principal versions produced were the MTU-12 and MTU-20, the latter being much larger.

The T-54/55Dozer variant was fitted with a BTU dozer blade for clearing soil, obstacles and snow in combat situations. It was used by the tank units requiring specialized engineer support. The dozer blade itself could be mounted in 90 minutes and dismounted in an hour. The ultimate T-54/55combat engineer vehicle, developed in 1969, was the IMR (Inzhenernaya Mashina Razgrazhdeniya) which was a T-55 fully converted to the engineer support role. The turret was replaced with a hydraulically operated crane with a lifting capacity of two tonnes, capable of turning through the full 360 degrees. The crane was operated from an armoured cupola and could also be fitted with a small bucket and used as excavator arm, or a pair of pincer-type grabs for removing obstacles like trees. Its jib was telescopic and when in travelling position was folded down and placed on a cradle in the rear of the hull, which was folded against the engine deck when the crane was in use. A hydraulically operated dozer blade was mounted to the front of the hull.

Two flamethrower variants of the T-54/55were produced; the OT-54, which was a T-54 armed with a flamethrower in place of the 7.62mm co-axial machine gun, and the TO-55, a flamethrower version of the T-55 incorporating an ATO-200 flame projector. The flamethrower was ignited by pyrotechnic charges, and 12 charges formed the basic load. The stowage tank, which replaced the hull ammunition rack beside the driver, contained 460 litres of

flammable liquid, and each burst averaged 36 litres. The maximum effective range of the system was 200 metres, with the stream having an initial muzzle velocity of about 100 metres per second.

The T-54/55series produced two mineclearing conversions, the BMR-1 and BMR-2, the former converted from an MTP-3 technical support vehicle (itself a conversion of the SU-122-54 SP gun) and the latter based on the T-55 chassis. They were fitted with a wide variety of mineroller systems or mine-clearing ploughs.

A convoy of Type 59 tanks on exercise in the Tianshan Mountains in 2017. (Wikimedia Commons)

The Chinese Copies: Type 59 and Type 69

In 1956, the Soviet Union supplied China with a quantity of T-54As, and a production facility was subsequently set up with Soviet help

at the Inner Mongolia Machinery Building Factory in Baotou, Inner Mongolia. The first Chinese-assembled T-54A, using kits supplied by the USSR, was rolled out in 1958. Small numbers of T-54As built with Chinese components were being produced by 1959, the vehicle being designated Type 59. Series production of the Type 59 began in 1963, and 10,000 units in a number of variants were built before production finally stopped in the late 1980s. The People's Liberation Army (PLA) took delivery of about 6,000 Type 59 tanks, most of which were still in service at the end of the 1990s. The tank was subjected to some significant upgrades in its later period of service: for example, the improved Type 59-I was fitted with a primitive fire-control system and a laser rangefinder, while the Type 59-II was fitted with a British L5 105mm rifled gun and a more powerful diesel engine. Some Type 59 tanks were also upgraded to Type 59D standard in the 1990s. The Type 69 was a progressive development of the Type 59, although its development was hampered by political factors like the Cultural Revolution, and it was a decade before it became operational. During the 1969 Sino-Soviet border conflict, the PLA was able to capture a Soviet T-62 MBT. The captured tank was examined, and some of its components, such as the Soviet Luna IR searchlight system, were copied and integrated into the Type 69 design. The Type 69, being cheap, simple and robust, went on to become one of China's most successful armoured vehicle exports. The Type 79 was a further improvement, entering production in 1984.

A lineup of Type 59 tanks. (Wikimedia Commons)

Specification (Type 59)

Armament: 1 x 100mm (3.94in) gun, 1 x 12.7mm (0.5in) MG, 2 x 7.62mm (0.3in) MGs

Armour: 203mm (8in)

Crew: 4

Dimensions: Length 9m (29ft 6in); Width 3.27m (10ft 8in); Height 2.59m (8ft 6in)

Weight: 36,000kg (35.43 tons)

Powerplant: Type 12150L V-12 diesel, 390kW (523bhp)

Speed: 50kph (31mph)

Range: 600km (373 miles)

The T-54/55 in Action

War Plans

By the late 1950s the armoured divisions of all the Warsaw Pact armies were armed with the T-54/55, their training and tactics following the standard Soviet pattern. This allowed the Russians to revise their contingency plan for war with NATO in the central region of Europe, which in the 1950s was based on an initial offensive being conducted mainly by Soviet forces already deployed in Poland, Czechoslovakia, Hungary and East Germany, supported by those based in the western USSR. The other Warsaw Pact forces would have been integrated into the Soviet-led Fronts. The problem with this plan was, that to be effective, it required the forces in the western USSR to be held at a high level of readiness, and progressive force reductions made it increasingly less feasible.

The revised plan therefore envisaged the initial attacks to be made by the Polish and Czech armoured divisions. While the Polish divisions thrust along the Baltic Sea flank towards Denmark and the Low Countries, Soviet forces in East Germany, supported by those of the German Democratic Republic, would advance through the Central Sector, with Czech forces forming a Front on the southern flank. The Czechs were given the task of advancing as far as the river Rhine in a sector roughly between Mannheim and the Swiss border; this would be achieved by six tank and six motorized rifle divisions, supported by a tactical air army of one fighter division and two fighter-bomber divisions.

Soviet forces would take over the offensive once the Rhine was reached, pushing past the river and continuing through France.

Once the initial objectives had been attained, Soviet forces in the western USSR would move quickly through the Polish and Czech forces, which presumably would now be thoroughly degraded and exhausted, and into the Central Region, to renew the offensive against NATO. This would take the form of a rapid, broad advance through West Germany and on to the English Channel. By this time the conflict would almost certainly have gone nuclear; it is known that in one scenario the Russians planned to use over 150 tactical nuclear weapons ranging from five to 50 kilotons in yield against high-value European targets, the notable exceptions being those in France and the United Kingdom, both countries having credible nuclear deterrent and tactical nuclear forces in the 1960s.

A column of Polish Army T-54As. (Polish Defence Ministry)

Conflict in Hungary

When the T-54/55did go into action on European soil, it was in an

area that had not been anticipated by either NATO or the Warsaw Pact. In the mid-1950s, with NATO intelligence on the latest military developments in the Soviet Union still sketchy, the capability of the T-54/55remained a matter of conjecture rather than factual assessment. This picture changed in 1956, when Soviet armoured forces were deployed to crush a popular uprising against communist domination of Hungary. When the uprising began in October 1956 Soviet military presence in Hungary comprised two mechanized divisions, the 2nd Guards stationed at Cegled, 50 miles southeast of Budapest, and the 17th Guards, 43 miles southwest. Their combined strength was 20,000 combat troops, supplemented by 600 tanks and other armoured vehicles, but only 700 soldiers and 50 T-54 tanks were initially deployed at key locations around the capital. Taken completely by surprise, Soviet commanders were at a loss as to what to do next. They had received no rules of engagement or orders to attack any rebel strongpoints, so they acted on their own initiative. After several days of vicious fighting that witnessed Soviet tank crews opening fire on Hungarian protesters and pounding residential buildings with shellfire, the Soviet government ordered its forces to withdraw from Budapest on 28 October on the pretext of entering into negotiations with the insurgents. The Soviet forces already inside Hungary were organized into two armies. The Eighth Army was deployed around the eastern city of Debrecen and numbered six divisions, including the 31st Tank Division. The Thirty-eighth Guards Army, stationed around the western city of Szekesfehrvar, comprised another seven divisions.

There were to be no negotiations of any consequence, nor was any quarter to be given in what happened next. At dawn on Sunday, 4 November 1956 the Soviets launched Operation Whirlwind. At its heart was an offensive from Romanian territory by two mechanized divisions, one infantry division, a fighter air division, one bomber air division, and a pontoon bridge regiment. They were all Guards divisions, the elite of the Soviet Army. In addition, four Guards tank divisions and two Guards mechanized divisions were assigned to capture and occupy Budapest with all possible speed, a task they accomplished with the utmost savagery. The 128th Guards Infantry

and the 2nd and 33rd Guards mechanized divisions, working in combat groups of around 150 men supported by a dozen tanks, pulverized the Hungarian position with air strikes and artillery bombardments before following up with tanks and supporting infantry, just as they had done in the assault on Berlin a decade earlier. Within a week the uprising had been crushed.

Czech Army T-55s advancing through the type of wooded terrain they would need to negotiate in a shooting war. (Wikimedia Commons)

A T-55 of the German Democratic Republic's National People's Army (NPA) firing its 100mm main gun as it advances through the surf during an amphibious landing exercise. (Neues Deutschland)

An East German T-55 disembarking from a Soviet tank landing ship during a Warsaw Pact exercise on the Baltic coast. (Neues Deutschland)

The first combat loss of a T-54: Budapest, November 1956. (Life)

A column of Soviet tanks rolling into Budapest, November 1956. (source unknown)

A somewhat macabre image of a T-54 knocked out by Hungarian freedom fighters, with coffins awaiting the bodies of the crew. (Life)

T-54 tanks in a ruined Budapest street, November 1956. Note the

white identification stripes. (Life)

The Soviet intervention in Hungary produced an unexpected bonus for NATO intelligence. During the height of the fighting freedom fighters captured a T-54 and drove it into the grounds of the British Embassy in Budapest. It remained in British hands for long enough to permit NATO tank experts to carry out a thorough examination before the vehicle was handed back.

The Hungarian Uprising was not the only European conflict in which the T-54/55was used operationally against one of Russia's Warsaw Pact Allies. In 1968, a new regime in Czechoslovakia initiated a series of political reforms and liberalization, a programme that was not received well by the Soviet Union. After failed negotiations between the Soviet and Czech governments, the former, with the agreement of other Warsaw Pact members, implemented a plan to invade and occupy Czechoslovakia.

Operation Danube: The 'Prague Spring'

During the third week in March 1968, NATO intelligence began to assemble information on large-scale movements of troops and armour taking place in the German Democratic Republic. Both of East Germany's armoured, and two of her four mechanized infantry divisions appeared to be involved. Agents reported that the 11th Mechanized Division and the 7th Armoured Division had left their bases in Erfurt and Dresden and were moving south along roads that were congested with all types of military traffic. In East Germany, the Russians had ten armoured divisions and a similar number of mechanized infantry divisions; about half this force was on the move. Two Soviet armoured divisions were reported to have left East German territory and crossed the border into Poland, presumably to reinforce the solitary Soviet armoured division that was already there.

On 10 May, an exercise involving two tank armies – one Soviet and one Polish, a total of 2,800 tanks of all types, but predominantly

T-54/55s, and some 84,000 troops – began in southern Poland. Its purpose was to test mobility and effectiveness of cooperation between large Soviet and Polish formations. About 150 ground-attack aircraft were also involved, together with an unspecified number of large assault helicopters. The exercise ended on 22 May, but on 10 June it entered a second phase, this time in the DDR, with five Soviet armoured divisions operating in concert with two East German mechanized infantry divisions. This exercise lasted a week, ending on 17 June.

Three days later, it was learned that Marshal Ivan Yakubovsky, the Warsaw Pact commander-in-chief, had set up a temporary HQ in Prague, from where the third phase of the manoeuvres was to be controlled. This third exercise, known as 'Bohemian Forest', began on 20 June, its principal aim being to coordinate the mobility of the Warsaw Pact land and air forces in Poland, East Germany and Czechoslovakia. The exercise ended on 30 June and all foreign units departed from Czech territory without any fuss. Soon afterwards, however, the West German intelligence service – the BND – reported that the exercise appeared to have been nothing less than a rehearsal for an invasion of Czechoslovakia. Significantly, most of the Soviet, Polish and East German armoured units that had taken part in 'Bohemian Forest' remained just across the border in Poland and the DDR.

On 28 July, following large-scale naval and air defence exercises, the Warsaw Pact manoeuvres entered what appeared to be their final phase with Exercise Niemen, a massive support operation of which the aim, ostensibly, was to establish how rapidly the forces on the front line opposing NATO could be reinforced and supplied. It was however becoming increasingly clear to NATO intelligence that the real strategic purpose of the manoeuvres was to prepare for a thrust into Czechoslovakia that would effectively cut the country in half. At the beginning of August, Soviet and East German convoys were observed to be moving south towards the Czech frontier along the autobahn leading from Dresden, while columns of Soviet armour were converging on an assembly point south of Warsaw. At the same time, units of the Bulgarian Army, having disembarked from transport ships at the Black Sea port of Odessa, were making their way through Soviet territory towards Hungary,

skirting the borders of Romania, whose government, along with that of Albania, had refused to participate in the forthcoming invasion (Albania, in fact, withdrew from the Warsaw Pact in the following year).

A well-camouflaged T-55 pictured on an exercise. (source unknown)

The invasion was set to begin at 2300 hours local time on 20 August 1968. Everything depended on good timing. The plan called for the capture of major military and civil airfields by airborne forces at the same time as the land forces reached their initial objectives. The order of battle was as follows:

To the north, in Poland, Army Group A, with its HQ at Legnica. Strength: three Soviet armoured divisions, one Soviet mechanized infantry division and one Soviet airborne division; one Polish mechanized infantry division, one Polish airborne division and one Polish Air Force division. The land forces totalled some 61,000 men and 1,600 tanks.

To the northwest, in East Germany, Army Group B, with its HQ in Leipzig. Strength: three Soviet armoured divisions and one East German mechanized infantry division. In all, 37,000 men and 1,400

tanks. (In the event, East German forces did not take part in the invasion, having been ordered not to cross the Czech frontier only hours before Operation Danube began.)

To the south, in Hungary, Army Group C, with its HQ at Györ. This army group, which had the task of advancing northwards across a 240-mile front into Slovakia, was split up into four separate formations. The first, on the left flank, consisted of two Soviet armoured divisions backed up by supply units; on its right stood one Hungarian mechanized infantry division, backed up by two Soviet armoured regiments from the 3rd Soviet Armoured Division and two Russian artillery regiments; the third formation, to the east of Budapest, comprised one Soviet armoured regiment, one Bulgarian mechanized infantry regiment and four Soviet rocket batteries; and finally, on the right flank, came two Soviet pioneer battalions, an armoured reconnaissance battalion from the 3rd Soviet Armoured Division, one Bulgarian armoured regiment and four Bulgarian mechanized infantry companies accompanied by maintenance units. The total strength of Army Group C was in the order of 40,000 men and 1,500 tanks.

Although the Czech Army had large numbers of T-55s, they offered no resistance to the invading Warsaw Pact forces. (Wikimedia Commons)

There were strong indications that the Czech Army would not resist, but as a safeguard the Russians and their allies painted white identification stripes on the turrets and glacis of their tanks. At

night, or from the air and at long range, there was no other way of distinguishing between Czech and Warsaw Pact T-54s and T-55s, which comprised the bulk of the invading armoured forces. Some T-62s were also employed, but most of these were assigned to elite front-line formations deployed on the frontiers with the NATO countries.

The seizure of the key airfields – the main ones being Ruzyne, Prague's international airport, and Brno City – was swift, the Russians making use of civil airliners configured as command and control centres, these apparently innocent aircraft landing and directing incoming Antonov An-12 transports which disgorged Soviet paratroops, who rapidly seized key points. Around 2300 the 7th Airborne Division equipped with ASU-57 light self-propelled guns arrived at Ruzyne airport, and later during the night of 20/21 August the first armoured units of Army Group A arrived in Prague from the north.

The first T-55 tanks arrived at Vinohradska Street at about 0800 on 21 August and they stopped in front of a barricade (comprising buses and other vehicles) at the Vinohradska and Italska crossroads. One tank, attempting to force its way through the barricade, reversed against a bus. During repeated collisions the bus's fuel tank was punctured and the spilled fuel was ignited by the hot tank exhausts. With its engine deck in flames, the tank drove to the front of Prague Radio building where the crew was forced to evacuate it.

The burning tank hindered the advance of the other Russian tanks and armoured transport so it was pushed aside by another T-55. During this process the rear fuel drums of the second T55 also caught fire, but the crew succeeded in extinguishing the flames. The first burning tank was eventually pushed to Balbinova Street where it continued to burn until the fire set off the ammunition, causing an explosion. Unfortunately, this explosion panicked the supporting Russian infantry, who opened fire at random and killed several Czech civilians. By this time Russian troops had begun to occupy the Radio Prague building, and Russian paratroops arrived riding on ASU-85 self-propelled guns.

Although the Czechs offered no armed opposition, there was plenty of non-violent resistance. For example, the removal of road signs led to part of the invasion force from Poland going round in circles for several hours. But the main objectives were secured within a week, and although the Warsaw Pact forces from Poland and Bulgaria were soon withdrawn, the Russians remained within the country, and it was eight months before passive resistance ceased. The principal armoured forces remaining in Czechoslovakia were the 30th Guards Motorized Rifle Division (with the 30th Guards Tank Regiment), the 31st Armoured Division (with the 77th, 100th and 237th Tank Regiments), the 15th Guards Tank Division (with the 29th, 239th, 244th and 295th Tank Regiments), the 18th Guards Motorized Rifle Division (with the 360th Tank Regiment), and the 48th Motorized Rifle Division (with the 375th Tank Regiment). Most would remain until 1991, a date that witnessed the disintegration of the Soviet Union.

Operation Danube has been described here in some detail because it gave NATO a valuable insight into how the Warsaw Pact forces would have fared in an assault on the West, an operation in which masses of T-55s would have played a principal part. The conclusion drawn by NATO experts was that the Warsaw Pact would have been unable to sustain a successful conventional attack on the West for more than three days unless its supply system was completely reorganized.

Desert Battles

Six-Day War

The first major engagement between the T-54/55and its British and American contemporaries, the Centurion and the M48 Patton, took place during the Arab-Israeli war of June 1967 (the so-called Six-Day War). At the start of this brief conflict the Egyptian Army had some 400 T-54s and T-55s, concentrated in the 4th Armoured Division and the 6th Mechanized Division, together with 60 IS-3

heavy tanks. The latter were embedded in a series of fortified infantry redoubts in Sinai, between the Gaza strip and Kusseima, while the T-54/55s were held in the rear, ready to engage any Israeli armoured formations that succeeded in breaking through, or to support an invasion of Israel should it be launched. Egypt's ally, Syria, had 150 T-54s. To oppose these forces the Israeli Defence Forces could muster 293 operational British-built Centurion tanks and 250 upgraded American M48A3 Patton tanks, although only 120 of the latter were operational.

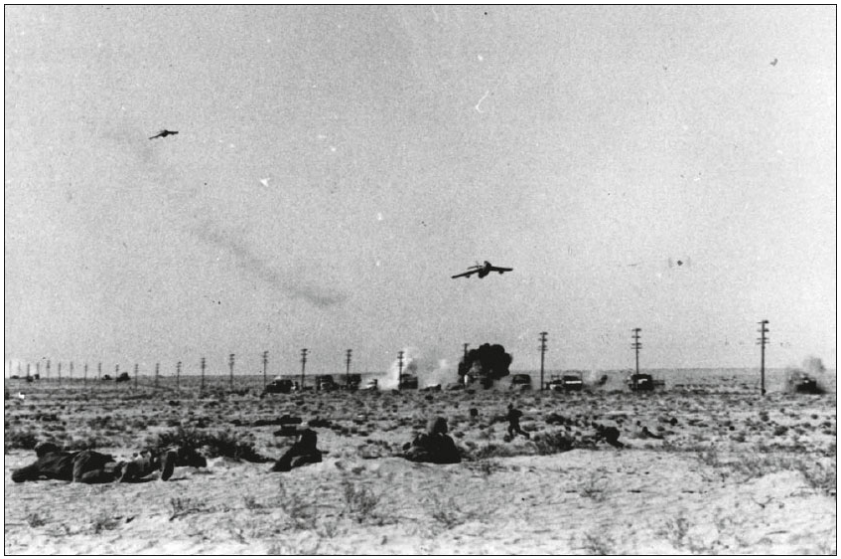
Czech students demonstrating in Prague as Russian tank men desperately try to extinguish flames in a burning armoured fighting vehicle. (Reuters)

Czech civilians look on helplessly as a T-55 stands guard in Prague. (Reuters)

Israeli armour advancing through Sinai, June 1967. (IDF)

The outcome of the Six-Day War was a massive victory for the Israelis, due in no small measure to the rigid adherence of the Egyptian and Syrian commanders to Soviet armoured tactics. Israeli tank tactics were vastly superior, based on high mobility and relentless assault. Israeli tank gunners were trained to engage targets accurately at up to almost a mile, which was well within the capability of the Centurion's 105mm gun, instead of holding fire until their targets were much closer. This gave them a distinct advantage over their Arab opponents, whose tank crews normally waited until they were within 550 yards, and often much less, before opening fire with their 100mm tank guns. Six years later, however, it was to be a different story.

A burnt-out Egyptian T-54 in Sinai. (IDF)



Egyptian Air Force MiG-15s attacking Israeli forces in Sinai. Despite sporadic attacks such as this, the Israeli Air Force retained complete air supremacy. (IDF)

Action in Jordan

In 1970, midway between the two principal Arab-Israeli wars, Palestine Liberation Organization factions in Jordan attempted to seize control of the country with the help of incursions by T-55 tanks of the Syrian Army. Elements of the Jordanian 40th Armoured Brigade, armed with British Centurion tanks and supported by the Royal Jordanian Air Force, broke up an attack by the Syrian 5th Division near Ar-Rathma, inflicting heavy losses on the enemy.

Yom Kippur

On 6 October 1973 – Yom Kippur, the Day of Atonement, the holiest day in Judaism – Egypt and Syria launched a surprise offensive against Israel, the Syrians attacking the Golan Heights in

the north and the Egyptians launching a two-pronged offensive with five divisions across the Suez Canal into Sinai. The losses sustained by Egypt and Syria in the Six-Day War had been made good by the Soviet Union; in addition to hundreds of T-55s, the Arab armies now fielded quantities of T-62s. The T-62 main battle tank was a straightforward development of the T-55 and was armed with a 115mm smoothbore gun. The T-62's main gun was the first smoothbore tank weapon in the world, giving much greater velocity and hitting power than the 90mm and 105mm weapons used by the western powers at that time. The T-62 was first put to the test in combat during the Yom Kippur war of 1973, and quickly revealed an unpleasant tendency to catch fire when penetrated. The Israelis captured several hundred from the Egyptians and Syrians during the conflict and pressed them into service, adding thermal imaging equipment and laser rangefinders, improving the armour and replacing the unreliable Soviet diesel engines with reliable American ones. In Israeli service the T-62 was known as the Tiran-6, many being sold on later to Third World countries.

In the opening battles against the Egyptian forces the Israelis took a terrible beating. The Egyptians had learned a lot during the previous six years; in forcing a passage of the Suez Canal the Egyptian Army leaned heavily on the Soviet Army's river-crossing expertise, developed to a very high degree during the Second World War. The Egyptians were also helped by flawed Israeli tactics. The Israeli armoured units, their commanders hypnotized by memories of the unopposed advances in the Six-Day War, dashed towards the Suez Canal ahead of their infantry and artillery and sustained punishing losses – as much as 40 percent – from Egyptian anti-tank weapons, ranging from man-portable RPG-7 rockets and RPG-43 grenades to AT-3 Sagger guided missiles. The latter knocked out 800 Israeli tanks during the conflict, many of them American M60s which had recently been delivered. It was the rapid delivery of more M60s in fact, that enabled the Israelis to counterattack across the Suez Canal and engage Egyptian forces in their own territory.

A further factor in the eventual Israeli victory was the collapse of

Syria's offensive on the northern front. Here, on the Golan Heights, the Israeli 7th Armoured and 188th 'Barak' Brigades, with 177 Centurions, fought off an assault by some 1,200 Syrian tanks in a battle lasting 51 hours. When the Syrians eventually withdrew they left 500 disabled and destroyed tanks on the battlefield. This wholesale destruction of Syria's armour enabled the Israeli Defence Forces to launch a counter-attack deep into Syrian territory, and at one point their tanks were within ten miles of Damascus, the Syrian capital.

In 1982 Israeli and Syrian armour clashed once more, when Israeli forces invaded the Lebanon and engaged Syrian tanks in the Beka'a Valley. The fighting cost the Syrians over 300 tanks, including 125 T-54/55s.

Iran-Iraq War, 1980–88

At the start of the Iran-Iraq War in September 1980, when Iraq launched a full-scale invasion of Iran, Iraq had an overwhelming superiority in armour, having around 2,700 tanks against Iran's 1,740, only 500 of which were operational. Eight years later, Iraq's tank strength had increased to 4,500, while Iran's had fallen to 1,000. The Iran-Iraq War, however, was not a conflict in which armoured formations played a significant part. Rather, it devolved into a conflict reminiscent of the First World War, with static defensive lines in which years of stalemate were punctuated by infantry offensives that saw slaughter on a massive scale. Yet while troops were being sacrificed on the ground, the most modern combat aircraft were in action overhead, and cities were under attack by ballistic missiles. It was a war of complete contrasts.

Gulf War, 1991

About a quarter of the main battle tanks acquired by Iraq during the 1980s were Chinese Type 59s and 69s. Many of these were still in

first-line service at the onset of the first Gulf War in 1991, although by this time the elite armoured divisions of the Iraqi Republican Guard were armed with the T-62 and T-72. Once the Iraqi Air Force had been subdued by five weeks of air attack, the Iraqi armoured forces proved no match for a combination of air power and the Abrams, Challenger and AMX main battle tanks deployed by the Coalition forces. In addition, the Iraqi tactics were seriously flawed; for instance, they tended to use their tanks in static defensive positions rather than in fluid formations.

The T-54/55went on to see action in other Middle East flashpoints, most notably in the Lebanon and Yemen, where some were still in use in 2018.

Asian Battles

In Asia, the Indian Army's T-54/55s played a key part in the Indo-Pakistan war of 1971. In Vietnam, T-54s saw action in the closing stages of the Vietnam War, taking part in several armoured engagements between the North Vietnamese Army (NVA) and the Army of the Republic of Vietnam (ARVN). The most notable action occurred in April 1972, when 18 T-54 tanks of the NVA 203rd Armoured Regiment attacked the 22nd ARVN Infantry Division at Tan Canh, destroying 18 M41 tanks and 31 M113 armoured personnel carriers for the loss of two T-54s and one PT-76 light tank. In 1978, NVA T-54s were involved in the North Vietnamese invasion of Kampuchea (Cambodia), and in the following year they resisted a limited Chinese offensive across the Sino-Vietnamese border, launched in retaliation for the NVA's operations in Kampuchea.

The Egyptian Army had received some 200 T-62 main battle tanks by 1973. Here, a T-62 is seen laying a smokescreen. (Wikimedia Commons)

A wrecked Israeli tank pictured during the early phase of the Yom Kippur war. Israeli armour initially suffered terrible losses. (Wikimedia Commons)

An Iranian T-55 left over from the Iran-Iraq War pictured near Abadan in 2007. (source unknown)

Iraq received large numbers of Chinese tanks, one of which – a Type 69 – is pictured in flames. (US Army)

A T-55 captured by rebel forces during the fighting in Yemen. (Al Jazeera)

T-55s of the Bosnian Army in action during the 1990s conflict in the Balkans. (via Del Lewis)

UN soldiers inspecting the burnt-out wreck of a T-55 in Bosnia. (via Del Lewis)

Africa

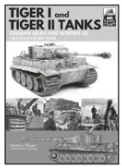
Although the Soviet Union found a ready market for the T-54/55in postcolonial African nations where Marxist governments had taken control, other African countries, not so keen to become involved in the politics of east and west, turned to China – which had experienced a rift with the USSR – in the 1960s for the supply of arms and armour. Consequently, although T-54s and T-55s were acquired from various sources, it was China's Type 59s that saw widespread use in the civil wars that erupted in countries like Ethiopia, Mozambique, Somalia and the Sudan. The T-55 first appeared in Angola in the 1970s, replacing the T-34s supplied by Cuba. In recent times, the T-54/55has seen action just about everywhere in the turmoil that accompanied the so-called 'Arab Spring' of the 21st century.

Balkan Conflict

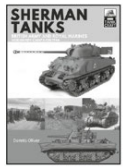
The 1990s saw the T-54/55in action during the vicious fighting that followed the breakup of Yugoslavia, a complex series of nationalist, ethnic and religious conflicts involving Serbia, Croatia, Slovenia, Bosnia, Montenegro and Kosovo. Only massive action by United Nations peacekeeping forces eventually brought the situation under control. By then, the surviving T-54/55s of the former Yugoslav People's Army had changed hands several times in the confusion of battle.

The aim of these innovative series is to provide modelmakers and enthusiasts with a new standard of primarily visual reference to both the full-size vehicles and their models, using detailed line drawings, plans and photographs, many in full colour. Each book is devoted to a famous military vehicle – chosen for its popularity as a modelling subject – but will range from main battle tanks to 4x4s.

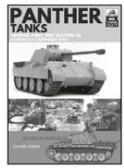
TANK CRAFT



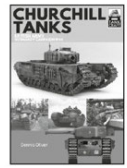
Tiger I and Tiger II: Tanks of the German Army and Waffen-SS
Eastern Front 1944



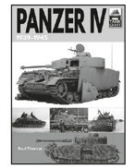
Sherman Tanks of the British Army and Royal Marines
Normandy Campaign 1944



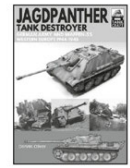
Panther Tanks
Germany Army and Waffen-SS, Normandy Campaign 1944



Churchill Tanks
British Army, North-west Europe 1944–1945



Panzer IV
1939–1945



Jagdpanther Tank Destroyer
German Army and Waffen-SS, Western Europe 1944–1945

Panzer I & II
Blueprint for Blitzkrieg 1933–1941

T-34
Russia's Armoured Spearhead

Tiger I
German Army Heavy Tank, Southern Front, North Africa, Sicily and Italy, 1942–1945

Cromwell and Centaur Tanks
British Army and Royal Marines, North-west Europe 1944–1945

Centurion
Armoured Hero of Post-war Tank Battles

Sherman Tanks, US Army, North-western Europe, 1944–1945

Tiger I and Tiger II Tanks, German Army and Waffen-SS, The Last Battles in the West, 1945

T-54/55
Soviet Cold War Main Battle Tank

Tank Destroyer
Achilles and M10, British Army Anti-Tank Units, Western Europe, 1944–1945

FORTHCOMING

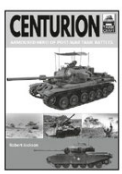
Panther: Germany Army and Waffen-SS
Defence of the West

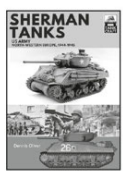
Chieftain
British Cold War Main Battle Tank

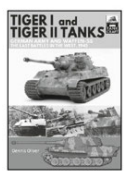
Challenger 1
British Main Battle Tank of the Gulf War

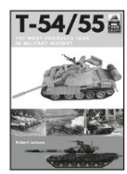
M1 Abrams
The US's Main Battle Tank in American and Foreign Service, 1981-2018

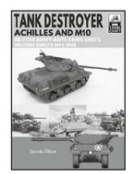
Tiger I: German Army Heavy Tank
Eastern Front, Summer 1943

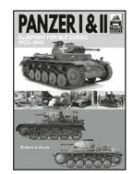




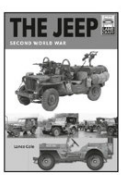






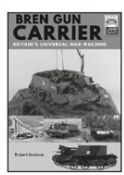


LAND CRAFT



The Jeep
Second World War

M2/M3
American Half-tracks of the Second World War



Bren Gun Carrier
Britain's Universal War Machine

A wide range of kits and accessories attests to the long-standing popularity of these military vehicles as modelling subjects, while significant differences between variants offers opportunities to 'individualize' models, as is so well illustrated in these books by many archive and modern photographs.